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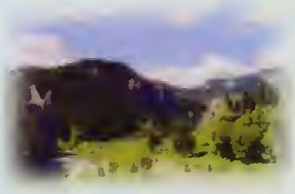
Montana Watershed Coordination Council

Opportunities -for- Communities & Landscapes 2003

Watershed Symposium



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December 8 & 9, 2003

Holiday Inn

Great Falls, MT

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Montana
Watershed
Coordination
Council

Welcome to the 2003 Watershed Symposium

As co-chairs of the Montana Watershed Coordination Council (MWCC), we welcome you to Montana's 2nd Watershed Symposium being held in Great Falls on December 8th and 9th, 2004. It has been six years since the last gathering of advocates, practitioners, educators, and interested citizens to share, study, and explore the locally led voluntary watershed approach to resolving and managing natural resource issues. We are delighted with the range of participants from Montana and the region, and welcome you whether you hail from Winnett, Wyoming or wherever you call home.

Since 1997, existing watershed groups have grown, changed, or ended, and new groups have emerged. Both old and new watershed efforts are being tested.

- Is this emerging vision of local community-based resource management a practical path for achieving a shared better outcome for all?
- Or is this collaborative problem-solving approach to governance of communities and landscapes, impractical and unrealistic for achieving long-term solutions?

For these two days, you will be among good company to look deeply at the watershed planning process. We will celebrate our progress, review our mistakes, and strive to learn from our different perspectives and practices.

Our appreciation goes out to the symposium planning committee led by the Montana Water Course, whose planning has helped bring us all together.

Bill Milton
Co-Chair MWCC

Amy Miller
Co-Chair MWCC

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Welcome from the MWCC Chairs

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The 2003 Watershed Symposium
Opportunities for Communities and Landscapes

Hosted by the Montana Watershed Coordination Council
December 8-9
Holiday Inn, Great Falls

December 8

Set up and Registration: Atrium
8:00-11:30: Booth and Poster Set-up
9:30-11:30: Registration

Opening Session: Poolside
11:45: Lunch
11:45: Welcome. Bill Milton and Amy Miller, Co-Chairs, Montana Watershed Coordination Council
12:30: Watershed Democracy in the West. Daniel Kemmis, Director, Center for the Rocky Mountain West *Introduced by Bill Milton*
1:30-2:00: A View from the Musselshell. Bill Milton, Coordinator Lower Musselshell

Concurrent Sessions: Strengthening Local Efforts

	Mansfield	Trailsend	Aronson
2:15-3:30	**How Watersheds Work** ***Dr. Duncan Patten,*** *MSU-Bozeman* ***Karin Boyd,*** *Hydrology, Inc.* *Moderator: Tom Pick, NRCS*	**Effectively Using Science in a Watershed Project** ***Big Hole:*** **Jim Magee**, MT FW&P: **Ray Weaver**, BHWC BHRF member, rancher **Jen Boyer**, BHWC, BHRF ***Graves Creek:*** **Rox Rogers**, USFWS **John Muhlfeld**, River Design Group; **Darris Flanagan**, rancher, member of Kootenai River Network *Moderator: Dr. Vicki Watson, UM –Missoula*	**Keys to a Successful Watershed Group** ***Richard Opper****: Big Spring* ***Mike Miller****: Lower Clark Fork Watershed Group* ***Jeff Crane****: North Fork River Improvement Association* *Moderator: Susan Higgins, Water Center*

	Mansfield	Trailsend	Aronson
3:45-5:00	**How Watersheds Work** ***Dr. Duncan Patten**, MSU-Bozeman* ***Karin Boyd**, Hydrology, Inc.* *Moderator: Tom Pick, NRCS*	**Effectively Using Science in a Watershed Project** ***Big Hole:*** **Jim Magee**, MT FW&P: **Ray Weaver**, BHWC BHRF member, rancher **Jen Boyer**, BHWC, BHRF ***Graves Creek:*** **Rox Rogers**, USFWS **John Muhlfeld**, River Design Group; **Darris Flanagan**, rancher, member of Kootenai River Network *Moderator: Dr. Vicki Watson, UM –Missoula*	**Keys to a Successful Watershed Group** ***Duane Richards**, Carter Co. CD* ***Lane Adamson**, Madison Valley Ranchlands Group;* ***Carolyn Ekarius**, Buffalo Creek and Coalition of the Upper South Platte* *Moderator: Bill Milton, MWCC*

Booth and Poster Session: *Watershed Spirit:* Atrium

5:00-6:30	**Hors D'oeuvres and Cash Bar**

Evening Session: Poolside

6:45: Dinner

7:30: Natural Resource Dialogue in the West – A Journalist's Perspective. Frank Allen, President and Executive Director, Institutes for Journalism and Natural Resources
Introduced by Sarah Carlson, Montana Association of Conservation Districts

December 9

Breakfast and Morning Sessions: Poolside

6:30-8:00: Breakfast Buffet Available

8:15: The State and Future of Western Water and the Emerging River Restoration Movement. Charles Wilkinson, Moses Lasky Professor of Law. University of Colorado at Boulder School of Law
Introduced by Kathleen Williams, Montana Fish, Wildlife and Parks

9:30-11:30: Natural Resource Policy and Trends: The Coming Challenges

Growth and Development: ***Terry Minger***, President and CEO
Center for Resource Management
Sustaining Agriculture: ***Jeff Schahczenski***, Executive Director
Western Sustainable Agriculture Working Group
Water Quantity: ***Laura Ziemer***, *Western Water Project*
Water Quality: ***Julie DalSoglio***, *EPA Region VIII*
Moderator: Kathleen Williams, FWP

11:30 - 12:30: Lunch: Poolside

Concurrent Sessions: Bringing it Home - Meeting Future Challenges with the Watershed Approach

	Mansfield	Trailsend	Aronson	Trigg
12:30-2:15:	**Water Quality** ***Will McDowell***, Tri-State Water Quality Council; ***James Wilbur***, Lewis &Clark Water Quality District *Moderator: Tammy Crone, Gallatin Local Water Quality District*	**Water Quantity** ***Peter Marchi***, Musselshell River Water Commissioner ***Tina Bernd-Cohen***, The Blackfoot Challenge *Moderator: Mike McLane, DNRC*	**Sustaining Agriculture** ***Tom Milesnick*** Recreation Company, MZ Ranch; ***Jess Alger*** *Moderator: Bill Milton*	**Growth and Development** ***Jon Sesso***, Director, Planning Department, Butte-Silver Bow ***Richard Moe***, Wheatland County Commissioner *Moderator: Jennifer Boyer, Big Hole Land Use Planning Group*

Closing Session: Mansfield/Aronson

2:30-3:30	**Synthesis and Looking Toward the Future:** Mary Ellen Wolfe, Program Manager, Community Mediation Center. *Introduced by Karen Filipovich, The Montana Watercourse*

Sponsors and Credits

Sponsors

Planning Committee

Credits

Acknowledgements

Sponsors of the 2003 Watershed Symposium

Opportunities for Communities and Landscapes

US Bureau of Reclamation, Montana Area Office

Bureau of Land Management, Montana

US Environmental Protection Agency

USDA Forest Service Region I

Natural Resources and Conservation Service, Montana

Montana Department of Natural Resources and Conservation

Montana Fish, Wildlife and Parks

The Water Center

Watershed Spirit Sponsors

Chippewa Cree Tribal Water Resource Department
(406) 395-4225
jay@cct.rockyboy.org

Natural Resource Information System
(406) 444-0534
tjabbenhaus@state.mt.us

Watershed Education Network
(406) 541-9287
water@montanawatershed.org

Montana Wetlands Legacy
(406) 994-7889
thinz@montana.edu

Montana Natural History Center
(406) 327-0405
mnhc@montana.com

Natural Resource Conservation Service
(406) 587-6742
lori.valadez@mt.usda.gov

National Park Service
(406) 587-1667
gary_weiner@nps.gov

Gallatin Local Water Quality District
(406) 582-3145
tcrone@co.gallatin.mt.us

National Center for Appropriate Technology
(406) 494-4572
mikem@ncat.org

Larix Systems, Inc.
(406) 458-0045
mteply@larixsystems.com

Watershed Consulting
(406) 862-3565
amy@watershedconsulting.com

Montana Department of Natural Resource & Conservation
(406) 444-6783
drichard@state.mt.us

Montana Conservation Corps
(406) 587-4475
don@mtcorps.org

USDA Forest Service
(406) 449-5201 ext. 245
bstuart@fs.fed.us

DTM Consulting, Inc.
(406) 585-0764
david@dtmgis.com

Confluence Consulting
(406) 585-9500
mmgowan@confluence.inc

National Center for Appropriate Technology
(406) 494-4572
mikem@ncat.org

Planning Committee

Alan Rollo	Sun and Teton Watershed Groups
Bill Milton	Co-Chair Montana Watershed Coordination Council
Bruce Sims	USDA Forest Service
Carole Mackin	Montana Department of Environmental Quality
Dave Martin	Department of Natural Resources and Conservation
Jennifer Boyer	Big Hole Watershed Committee
Jim Wilbur	Lewis and Clark Local Water Quality Protection District
Julie DalSoglio	US Environmental Protection Agency
Kathleen Williams	Fish, Wildlife and Parks
Kim McCartney	U.S. Bureau of Reclamation
Mary Ellen Wolfe	Community Mediation Center
Michelle White	The Water Center
Mike McLane	Department of Natural Resources and Conservation
Paul Azevedo	Department of Natural Resources and Conservation
Rich Moy	Department of Natural Resources and Conservation
Sarah Carlson	Montana Association of Conservation Districts
Susan Higgins	The Water Center
Tammy Crone	Gallatin Local Water Quality District
Ted Hawn	Natural Resources Conservation District
Tom Pick	Natural Resources Conservation District
Vicki Watson	University of Montana

Coordinator:

Karen Filipovich	The Montana Watercourse

Acknowledgements

As coordinator of a large, volunteer effort to produce this Symposium, there are more people than I can possibly thank, but I have a few people that I would like to acknowledge for their extraordinary contributions. Everyone on the planning committee put in time and effort to make this Symposium a reality, and deserve your thanks, since this event could not have been done without all of them. I'd especially like to acknowledge Kathleen Williams, Mike McLane, Tom Pick, Susan Higgins, Vicki Watson, and Bill Milton for hunting down and persisting with the committee sub-groups and ensuring that the right speakers were identified, recruited, and given their assignments. Paul Azevedo and Alan Rollo did an incredible amount of the unglamorous work necessary to pull an event of this size off. And special thanks to Susan Higgins, Kathleen Williams, Mary Ellen Wolfe, Tammy Crone, Carole Mackin, Michelle White, Jennifer Boyer, and Carole Mackin for their steady work on shaping the event and making sure that the information and media was in line with the purpose and vision.

At the Montana Watercourse, I'd like to thank Susan Anderegg for her unflagging good cheer as we worked through the registration and logistics of an event with over 200 attendees and more than 30 speakers. I'd also like to thank all the people who are helping with logistics at the Symposium: Susan Russell, Corky Logan, Jill Leubeck, Jim Wilbur, Jim Robinson, Carole Mackin, Michelle LeBeau, Kristi Neptun, Alan Rollo, Paul Azevedo, and Kate Colenso. I`m sure that there are many more that will step in whenever something is needed.

We were also lucky in our sponsors. At EPA, Peter Ismert, Chris Lewiski and Julie DalSolgio were very helpful in providing the core funding for the event. At the USBR, Kim McCartney provided much needed funding for both the event and for my time so that I could work on the event. At DNRC, Rich Moy provided salary, oversight, and funding to help provide professional design help, and Ray Beck, Laurie Z and the committee for the 223 provided essential funding for speakers and for scholarships. At FWP, Kathleen Williams helped with design work funding, and Kurt Cunningham enabled educators and students to attend the event. Dave White and Dave Kascht provided sponsorship from NRCS for speakers and materials. Bruce Sims at the USDA Forest Service helped underwrite equipment, and Peter Bierbach at BLM provided much needed general funding. Gretchen Rupp at the Water Center helped out with printing costs. Amy Miller and Alan Rollo, as well as the Montana Watercourse provided fiscal sponsorship of the event for the Montana Watershed Coordination Council.

Finally, I would like to thank every speaker and moderator. They have put in time and effort to try to bring their perspectives and expertise to the table so that we can all come away enriched, inspired, and motivated to go home and work more effectively.

Credits

Cover Design:

Duncan Bullock, Blue Ribbon Graphics

Photos:

Roxann Lincoln
Duncan Bullock
Tammy Crone

Speakers

Biographies

Speaker Biographies

Lane M. Adamson

Lane M. Adamson was raised on a ranch south of Augusta, Montana. He attended college at Montana State University, Texas Western College (UTEP), College of Southern Utah (SUSU) and Brigham Young University. While attending school, he also pursued his interest in rodeo. Adamson spent most of his working career in ranch management in various parts of Montana, and also served as a Crew Leader in Livingston for the 1980 census and in Harlowton for the 2000 census. He worked for 3 years in real estate but found himself trying to talk people out of buying recreational property because they either didn't understand what they were getting into or continued development was not good for the area. Adamson has worked for the Madison Valley Ranchlands Group for 2 and one half years, and presently serves on the Madison county planning board, the Ennis Chamber of Commerce board and the Madison County Economic Development Council. He is "married to a cute little gal from Kansas" and they have 9 children.

Frank Allen

Frank Allen is a former environment editor and bureau chief of *The Wall Street Journal*, where he spent most of his three-decade journalism career. He has reported and edited for daily newspapers and news-wire services in Eugene, Portland, Tucson and Minneapolis. He served as dean of the University of Montana's School of Journalism, teaching and conducting expedition style programs for mid-career reporters and editors. Currently, he is president and executive director of the Institutes for Journalism and Natural Resources (IJNR) and principal author and editor of IJNR's recent publication, *Matching the Scenery: Journalism's Duty to the North American West.*

Tina Bernd-Cohen

Tina Bernd-Cohen is a Planning Consultant living in Helena Montana. For the past four years she has been the Executive Director of the Blackfoot Challenge, a landowner-based watershed nonprofit organization. Prior to coming to Montana, she was a consultant for twelve years to federal and state agencies and interest groups, working on a variety of state and national projects focusing on policy, planning, research and support services aimed at balancing development and resource protection along our nation's coastlines. She has written several reports and articles dealing with coastal programs and policies affecting coastal and marine resources.

Jeff Crane

Mr. Crane is a founding member and the Executive Director of the North Fork River Improvement Association (NFRIA). The Association was established in 1996 as a volunteer coalition aimed at restoring the ecological health of the North Fork of the Gunnison River for the benefit of all water interests within the community. Jeff has developed numerous collaborations with a wide variety of unique partners for different community projects designed to improve stream stability, riparian habitat, and ecosystem function. He has used consensus-building techniques to develop a watershed restoration action strategy designed to be acceptable to the diverse community interests related to the river including riverfront landowners, hunting and fishing groups, gravel mining companies, environmental groups, farmers and ranchers, irrigation companies, and recreational groups. He develops community river education programs for both adults and students to teach the values, principles, and processes of river corridor restoration.

Jeff has over 19 years experience as a civil engineer and hydrologist and has used his talents to design and engineer several stream restoration and enhancement projects including floodplain rehabilitation, bank stabilization, and habitat enhancement along six miles of the North Fork of the Gunnison River. Other projects include the reconstruction of irrigation diversions to deliver a full decree of water to the agricultural community while developing structures that allows for upstream migration of fish, safe downstream passage of recreational boats, and increased in-stream flows. One current project consists of the restoration of a previous in-stream gravel mine into a 30 acre river park in Paonia that will include riverside trails, picnic areas, swimming and fishing holes, and a kayak course. He has also developed stream assessment and monitoring programs for several streams throughout the Western United States.

Julie A. DalSoglio

Julie DalSoglio is currently Deputy Office Director at the Montana Office of the EPA with additional program responsibilities for the Clean Water Act. She has spent the last four years as Manager for Montana's Non Point Source Program, Project Officer for Montana's Clean Water Act 106 and 319 grants, and represents EPA on the Tri State Water Quality Council and Flathead Basin Commission.

Julie graduated from Montana State University in 1989 with a Masters in Public Administration. She worked for the 49th Parallel Institute on U.S./Canada Relations from 1985-1987 and served as a Presidental Management Intern at EPA in San Francisco, California from 1987-1989.

Julie has worked in the EPA Montana Office since 1989, including 10 years in the Superfund Program as Project Manager for the Milltown, Clark Fork River and Anaconda Superfund sites.

Daniel Kemmis

Daniel Kemmis, Director of the Center for the Rocky Mountain West, is the former Mayor of Missoula, and a former Speaker and Minority Leader of the Montana House of Representatives.

Mr. Kemmis serves on the Boards of Directors of the Northwest Area and Kettering Foundations, the Missoula Redevelopment Agency, the Institute for Environment and Natural Resources, and the Bolle Center for People and Forests. He serves on the Advisory Boards of the Western Governors' Association's Enlibra Project and of the Brookings Institution's Center on Urban and Metropolitan Policy.

Mr. Kemmis is the author of *Community and The Politics of Place* and *The Good City and the Good Life*. His newest book, *This Sovereign Land: A New Vision for Governing the West*, was published by Island Press in June of 2001. He has had articles published in national and regional magazines and journals on public policy in the West, democratic theory and practice, community and community building, and bioregionalism, and he is frequently invited to speak on these and related topics at regional and national conferences. He was recognized by the Utne Reader in 1995 as one of its "100 Visionaries." In 1997, President Clinton awarded Mr. Kemmis the Charles Frankel Prize for outstanding contribution to the field of the humanities. Also in 1997, he was the recipient of the Society for Conservation Biology's Distinguished Achievement Award for Social, Economic and Political work. In 1998, the Center of the American West awarded him the Wallace Stegner Prize for sustained contribution to the cultural identity of the West. In the fall of 1998 he was awarded a fellowship at the Harvard Kennedy School's Institute of Politics. In February, 2000, he was invited to Washington, D.C., to deliver the Pinchot Distinguished Lecture. In 2002, his book *This Sovereign Land* was the top choice for the Interior Department's Executive Forum Speaker Series.

Mr. Kemmis is a graduate of Harvard University and The University of Montana School of Law.

Peter Marchi

Peter is a native Montanan, and has spent the majority of his life involved in agriculture. Currently, he and his wife Cheryl own and operate the Crazy Mountain Inn, a historic hotel/cafe in Martinsdale, MT. Peter was the appointed water commissioner for the Upper Mussellshell River Enforcement Project last season. He is also the licensed operator for the Martinsdale Water Users Association, a member of the Martinsdale Water Board, Fire Board and is the School Board Chairman of School District 8.

Will McDowell

Will is a hydrologist with a Masters Degree in Watershed Hydrology from the University of Arizona, Tucson. He has worked as a private consultant in stormwater hydrology, soil and water conservation and watershed management programs since 1985; including nine years living overseas and managing soil and water conservation programs in Bolivia and El Salvador. Since 1999 he has worked on long-term contracts for the Tri-State Water Quality Council in the Clark Fork watershed, and is based in Missoula.

Tom Milesnick

Tom Milesnick is a Montana native who has lived on the family ranch north of Belgrade his entire life. His formal education was at Belgrade and Montana State University. In addition to full-time ranching and tending his land to enhance flyfishing opportunities, Tom is the Chairman of the Thompson Creek Watershed Project, on the board of the Gallatin County Conservation District, a member of the Montana Stockgrowers, the Gallatin County Beef Producers, on the Future Fisheries Advisory Council, and on the Gallatin County Open Lands Board. Among his awards for his innovative ranching practices are the Montana Stockgrowers-Environmental Stewardship Award, NCBA Region 6 Environmental Stewardship Award, and the Gallatin Beef Producers Cattleman of the Year award. He and his wife Mary Kay have 3 sons, 1 stepdaughter, and 2 grandchildren.

Mike Miller

Mike Miller has been an environmental consultant since 1981 and a watershed council coordinator since 1996. He has been involved in ten watershed councils in northwest Montana, assisting in their start-up and operation, development of watershed management plans, and in restoration and management projects. Previous to the watershed work, Mike worked on a wide range of projects involving environmental impact analysis, land use planning, large project permitting, wetlands delineation and mitigation, project management and coordination.

Bill Milton

Bill Milton, born in 1949 in the San Francisco Bay area, shared his childhood between the coastal habitats of Northern California and his father's ranch in the northern foothills of the Big Belt Mountains. Following his father's death in 1966, his love of Montana plants, animals and open spaces motivated he and his siblings to transform their family ranch into the Beartooth Game Range. The Range effectively incorporates planned livestock grazing as a complement to wildlife management. In 1978, Bill returned to ranching locating in Musselshell County, north of Roundup. In the rain shadow of the Snowy Mountains, Bill, along with his family and ranch management team, has spent the last twenty-five years developing drought-tested holistic grazing practices that can support their grass and animals.

During the past 25 years Bill has been actively involved in land conservation and resource management. He was a founding Board Member of the Montana Land Reliance, assisted in the formation of the Devil's Kitchen Management Team, and was a member of the BLM's first eastern Montana Resource Advisory Council. While Bill continues to manage the family ranch he also provides facilitation services to family businesses and organizations. Bill currently co-chairs the Montana Watershed Coordinating Council, serves on the Roundup School Board, chairs the Musselshell Valley Community Foundation, and works as a watershed coordinator for landowners and conservation districts in the Musselshell Watershed. Active in his local community, Bill has contributed his time raising funds to build a new community pool, participated in the development of a riverside walking trail and has volunteered as a reader in the elementary school for the last twelve years.

Terrell (Terry) J. Minger

Terry Minger is the President and Chief Executive Officer of the Center for Resource Management (CRM). Minger's interests and career span the public, private, and not for profit sectors. He has served as President and CEO of Sundance Enterprises, a resort, ski area, and international conference center and film and fine arts community; as President, CEO, and developer of Whistler-Blackcomb Resort in British Columbia, Canada; as Deputy Chief of Staff to Colorado Governor Richard Lamm; as Assistant City Manager in Boulder, Colorado; and as City Manager of Vail, Colorado for a decade.

He has served as a business, environmental and community advisor to many corporations, foundations and governments, including Phillips Petroleum, Southern California Edison, The World Bank, the Western Governor's Association and the USDA Forest Service. Currently, Minger's activities include chairing Wal-Mart's Environmental Advisory Board; co-leading the Western Charter Project with Daniel Kemmis of the University of Montana; and leading dialogue between the ski industry, environmental community, and others focusing on sustaining mountain ecosystems.

Minger has written two books on the impacts of growth and development in the Rocky Mountain West, and *Greenhouse Glastnost*, on the United States and Russia's impact on global climate change. He is founder and Honorary Chairman of the 25 year old Vail Symposium on environmental and development issues facing the West and Co-Founder and President of the Western Rendezvous. Minger is a frequent writer and speaker on greening business, sustainable communities, and global environmental and resource management issues. He also helped make the film "Subdivide and Conquer" which focuses on sprawl issues and solutions. and Conquer," which focuses on sprawl issues and solutions.

Minger received a B.A. in History and Economics from Baker University, an M.P.A. from the University of Kansas, and an M.B.A. from the University of Colorado. Minger received the 1999 Jane Silverstein Ries Foundation Award for his lifelong environmental contributions to the Rocky Mountain West.

Richard Moe

Richard Moe is a lifelong agricultural producer and resident of Wheatland County. He is serving his second term as Wheatland County Commissioner. For the past five years he has been involved in encouraging economic development in rural areas, particularly in the Central Montana region. His current areas of involvement include Musselshell Water Enforcement Advisory Group, Snowy Mountain Development Corporation, Central Mountain Resource, Conservation and Development, Friends of the Bair Museum Committee, Wheatland County Growth Council. Richard is a founding member of Cream of the West LLC, the group that purchased Cream of the West, and relocated it to Harlowton, Montana.

Duncan T. Patten

Duncan Patten is Research Professor with the Big Sky Institute at Montana State University, Professor Emeritus of Plant Biology and past director of the Center for Environmental Studies at Arizona State University. Dr. Patten received the A.B. degree from Amherst College, M.S. from the

University of Massachusetts at Amherst, and Ph.D. from Duke University. His research interests include arid and mountain ecosystems, especially the understanding of ecological processes and restoration of western riparian and wetland ecosystems. It also involves studies of ecosystem indicators of watershed condition including remote sensing of indicators, biocomplexity of natural and human system interactions in western rangelands, and conceptual modeling of national park ecosystems. He was Senior Scientist of the Bureau of Reclamation's Glen Canyon Environmental Studies, overseeing the research program evaluating effects of operations of Glen Canyon Dam on the Colorado River riverine ecosystem. He has published extensively on desert and mountain ecosystem processes and was plant-process coordinator of the IBP Desert Biome program. Dr. Patten was founding president of the Arizona Riparian Council, and is past-president of the Society of Wetland Scientists. He is a Fellow of the AAAS, has been a member of the National Research Council's Commission on Geoscience, Environment and Resources, the Board on Environmental Studies, and has served on and chaired several NAS/NRC committees.

Richard Opper

Richard Opper has spent the past 25 years working in the natural resources field. He received his M.S. in Environmental Sciences in the late-1970s from Montana State University. During the mid-1980s, Mr. Opper spent several years in New Mexico where he worked on public lands grazing policies and served as a natural resource planner for ranchers, environmental organizations, government resource agencies, and Indian Pueblos. In the late 1980s, Mr. Opper returned to Montana to serve as the Executive Director of the Northern Lights Institute, a non-profit organization that addressed natural resources issues in the western United States. In July 1990, Mr. Opper was hired as the Executive Director of the Missouri River Basin Association (MRBA), a job he continues to hold.

The MRBA is a coalition of states and Indian tribes in the Missouri River basin. Since 1995, it has been working with federal agencies, states, Indian tribes, and stakeholders to develop a new operating plan for the Missouri River that would benefit both people and fish and wildlife in the basin.

Opper likes to write in his spare time and is a published novelist. He lives in Lewistown with his wife, Sally and son, Isaac.

Duane Richards

Duane has been a supervisor for the Carter County Conservation District for twelve years and served as Chairman for six years. Duane initiated the water quality program in 1994 and continues to be the leader and spokesman for this project. The Carter County Conservation District, in cooperation with Warren Kellogg, NRCS, and DEQ, established a Stream Monitoring Program and has been in place since 1994. In 2001 Duane led the effort for the conservation district to coordinate the Thompson Creek Task Force with representation from private mining industry, BLM, DEQ, NRCS, and MSU Extension. The objective of this group is to have a unified monitoring program and evaluate the impacts of the existing and future uses in the watershed.

Duane Richards is a livelong resident of Carter County and is the fourth generation landowner on the Box Elder Creek. Duane and his wife Melinda farm and ranch 46 miles south of Ekalaka. They have two sons, Jeremy and Everly, both at home.

Jeff Schahczenski

Jeff Schahczenski is currently Executive Director of the Western Sustainable Agriculture Working Group an organization of 43 western organizations dedicated to promoting and educating its members and the public about progressive public policies that will promote sustainable western agriculture. Jeff has lived and worked in Montana for the past eleven years, working with the Alternative Energy Resources Organization (AERO) on a regional sustainable agriculture project, serving as an adjunct instructor for Western Montana College and Montana Tech, serving on several non-profit boards and building his own straw bale house and greenhouse. Before moving to Montana, Jeff worked for Rutgers University, started one of the first CSA (Community Supported Agriculture) farms in New Jersey, received graduate degrees in agricultural economics and political science and served in the Peace Corps in Belize, Central America. Growing-up in Wisconsin, his interest in “things” agriculture started with many summers of work on his grandfather’s dairy farm.

Jon C. Sesso

Since 1991, Jon Sesso has been the Director of the Planning Department in Butte-Silver Bow, a consolidated city-county government in Southwestern Montana. He also coordinates environmental cleanup (Superfund) activities, including a number of successful brownfields redevelopment projects. Previously, Jon served as the Director of the Montana Natural Resource Information System at the Montana State Library in Helena, Montana, and as VP-Operations for the National Center for Appropriate Technology in Butte, working on a variety of conservation and renewable energy projects. Jon received a B.A. in Communications and a Master’s Degree in Communications and Environmental Studies from the University of Wisconsin-Madison. Currently, Mr. Sesso serves on the Board of Directors of the Montana Consensus Council, the Montana

Geographic Information Council, the Upper Clark Fork River Basin Steering Committee, and the Montana Association of Planners. Past appointments include the National Advisory Council for Environmental Policy and Technology (Superfund reauthorization issues) and the National Environmental Justice Advisory Council (facility siting issues).

James Wilbur

Since 2001, Jim Wilbur has been the Watershed & Community Outreach Coordinator for the Lewis & Clark County Water Quality Protection District. He also coordinates the Lower Tenmile Watershed Group and is currently working to organize a group within the Prickly Pear Creek watershed. He also works as a private environmental consultant in hydrology, storm water management, solid waste management, and regulatory compliance. Previously, Jim has worked in various positions with the Montana Department of Natural Resources and Conservation, the Department of Health and Environmental Science, and the Department of Environmental Quality. Jim received a B.A. in Political Science from the University of Wisconsin-Eau Claire and a Master's Degree in Earth Science from Montana State University.

Charles Wilkinson

Charles Wilkinson is the Moses Lasky Professor of Law at the University of Colorado at Boulder School of Law. Wilkinson has written broadly on land, society, and law in the American West. His many articles and books include the standard law school texts on federal public land law and Indian law, and *Crossing the Next Meridian; Land, Water, and the Future of the West*. A popular magazine recently referred to him as "the West's foremost authority on natural resources law". In addition to teaching and writing, Professor Wilkinson has taken on many governmental assignments including special counsel for the Interior Department, member of a committee of scientists overseeing forest planning for the Department of Agriculture, and mediator in complex Federal-Tribal negotiations.

Mary Ellen Wolfe

Mary Ellen Wolfe is the head of the Community Mediation Center, owner of a Bozeman based natural resource and public affairs consulting firm and former director of the Montana Watercourse. She has worked extensively to help people understand and use their water resources wisely. She was also Winner of the EPA Region VIII 2002 Environmental Achievement Award and the 2003 National Soil and Water Conservation Society (SWCS) honors award.

Laura Ziemer

Laura Ziemer opened the Montana Water Project office for Trout Unlimited in August of 1998, and has directed its work since that time. The Western Water Project works in six states, (Montana, Colorado, Wyoming, Idaho, Utah, and California), to restore and maintain streamflows for healthy coldwater fisheries by addressing water allocation issues. In Montana, Laura has expanded Trout Unlimited's water leasing program through legislative improvements to the program as well as completing a number of conversions of irrigation water rights to instream flow rights. In addition to water leasing and other initiatives, she has helped close the Bitterroot River Basin to new diversions, initiated a successful drought response plan on the Blackfoot River, and obtained a favorable ruling from the Montana Supreme Court recognizing instream flow rights under the prior appropriation doctrine.

Before joining Trout Unlimited, Laura had been practicing public-interest environmental law since 1993 as an attorney with the Sierra Club Legal Defense Fund (now Earthjustice Legal Defense Fund) out of Seattle, Washington and later in Bozeman, Montana. With the Legal Defense Fund, Laura litigated a variety of public lands issues, including protecting grizzly bear habitat, managing northern spotted owl habitat, and challenging the dioxin discharges of the pulp and paper industry. She tackled litigation over water rights in the Methow Valley of arid eastern Washington, weighing in on water transfers that violated state law and served rapid development at the expense of fish and wildlife. Also in Washington state, Laura challenged the grant of groundwater pumping permits which harmed instream flows in nearby streams and rivers. Prior to working with the Sierra Club Legal Defense Fund, Laura served as a judicial clerk for two years to the Honorable Barbara J. Rothstein of the United States District Court for the Western District of Washington in Seattle. She is a graduate of the University of Michigan, graduating *cum laude* from the Law School while earning a Master's Degree in Resource Ecology from the School of Natural Resources.

Afternoon Session

Watershed Democracy in the West

A View from the Musselshell

Concurrent Sessions: Strengthening Local Efforts

- How Watersheds Work
- Effectively using Science in a Watershed Project
- Keys to a Successful Watershed Group

Watershed Democracy in the West

Daniel Kemmis
Director
O'Connor Center for the Rocky Mountain West

Daniel Kemmis has spoken and written widely on regionalism, place-based governance and emerging responses to natural resource challenges. In this talk, he will discuss the relationship between democracy and watershed approaches. For a full description of his work and the work of the Center for the Rocky Mountain West, please check on the web t at: http://crmw.org/

A View from the Musselshell

Bill Milton
Musselshell River
Co-Chair Montana Watershed Coordination Council

Bill Milton has been a watershed co-coordinator with Alice Wolfe working primarily through the Lower Musselshell Conservation District on water and riparian related projects on the Musselshell and associated tributaries. His talk will explore the transformational power that can arise in circles. How people and communities when creatively realigned can sometimes magnify their capacity to solve difficult problems. He will draw from personal experience and the experience of others to highlight real examples of this practice in action in the Musselshell. Bill will share both the good and the not so good, as well as the joy and difficulty that can accompany local collaborative efforts.

How Watersheds Work

Duncan Patten[1] and Karin Boyd[2]
[1]Big Sky Institute, Montana State University and [2] Applied Geomorphology, Inc.
Bozeman, MT

This discussion will take the audience from a broad overview of the major components of a watershed through more detail about how each of these components function to form a holistic, integrated watershed. The talk will emphasize both hydrology and ecology of the watershed and how they are related, but other aspects of watershed function and human activities will be brought together to demonstrate that watershed management must consider both the scientific foundations of watershed processes along with human activities and needs. Extensive use of illustrations in the presentation will demonstrate important points.

Introduction: What is a Watershed.

The introduction will discuss how a watershed is delineated. Recognizing the boundaries of a watershed is necessary to understand the processes and outputs of the watershed. As background for other sessions in the conference, this presentation will discuss most of the components of a watershed and their interrelationships. These components include: (1) hydrological cycle from atmospheric water through inputs and outputs of the watershed, (2) water movement within the watershed on and below the soil surface, (3) the influence of land cover and use, and (4) the river ecosystem and its control of and response to watershed outputs and alterations.

Hydrological Cycle and Watershed Mass Balance.

Watersheds represent a diverse environment, often having large variations in elevation, land cover and geology. Atmospheric water can be considered the initial component of watershed hydrology. Precipitation in the form of rain or snow falls across the watershed, not always in even patterns. Snowfall, collecting at higher elevations becomes a form of long-term water storage, while rainfall is more short-term when on the surface. Rainfall and snowmelt, however, both may become very long-term once they infiltrate into soil and move to groundwater. Precipitation does not fall evenly throughout the year, nor does it fall in equal quantities from year to year. The seasonal and annual variability of precipitation makes understanding water storage capacities of watersheds and watershed hydrological mass balance all the more important.

Elevation plays a role in form of precipitation. Mountains cause orographic lift of storms which increases the potential for condensation and precipitation. Snow may be the form of precipitation at higher elevations while rain is falling at lower elevation as condensation passes through warmer air.

Precipitation is thus the initial hydrological input to the watershed. If nothing else happened to precipitation, whether rain or snow (or snowmelt), the runoff and hydrological output of the watershed would be equal to precipitation, that is, P = Q (where P is precipitation and Q is river output from the watershed unit).

As we all know, this is not the case. Many processes, with or without human alterations, play a role in modifying or adding to this simple equation (P = Q). An understanding of the processes which constitute the watershed hydrological mass balance should permit better development of watershed management goals.

Processes to be discussed that modify the mass balance equation include: evaporation and transpiration (ET), surface runoff and water infiltration, soil water storage (S), and groundwater storage and movement (GW). Consequently, when these processes are included in the equation, the watershed mass balance equation becomes: P – ET +/-S +/-GW = Q (see Figure 1). These additional processes are discussed below relative to the role of land cover and vegetation, soils, geology and land use.

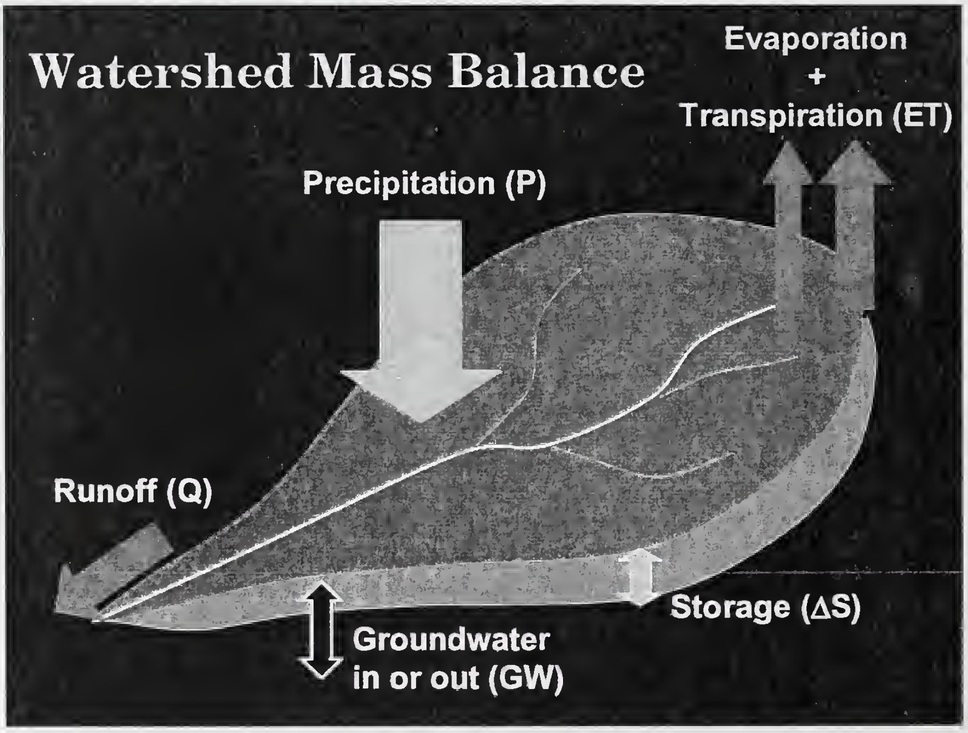


Figure 1. Watershed mass balance showing components of a mass balance equation: P- ET +/-S +/-GW = Q (Figure from Brian McGlynn).

Role of Land Cover in Watershed Hydrology.

Watershed land cover, initially to be discussed excluding changes from human activities, includes all the attributes that one normally would consider as part of the landscape such as vegetation, water bodies, bare soil, and rocks. Each of these attributes functions differently in terms of the hydrological mass balance of the watershed. Each of these is also modified in most watersheds by human activities.

Vegetation.

Plants play several roles in watershed hydrology and mass balance. Initially, plants intercept precipitation, rain and snow. Some precipitation reaches the ground surface through "through-fall", or "stem flow", but some intercepted precipitation evaporates (E) and is lost directly back into the atmosphere. Intercepted snow may stay on plants for some time, but eventually it melts and functions like rainfall, falls to the ground or sublimates (evaporates by going directly from solid to gaseous form). Consequently, the form of vegetation (plant types) plays an important role in the initial interception of rain and snow. Trees and shrubs intercept more precipitation than herbaceous plants while snowfall may compress herbaceous plants producing a snow layer that is nearly in contact with the soil.

A second role of vegetation in the watershed mass balance is transpiration (T), the loss of water from the plant through evaporation through stomates (small pores) in the plant leaves. Water lost through transpiration initially comes from water stored in the soil unsaturated zone (vadose zone) and taken up by plant roots in that zone.

A third role of vegetation in watershed hydrology is control of surface runoff and thus the rate of water infiltration into the soil. The rate of runoff directly relates to surface roughness, that is, the composition and structure of the vegetation and other structures (e.g., rocks) on the ground surface. The greater the roughness, that is, more vegetation or surface flow impairments, the greater the potential for increase in water infiltration into the soil. Obviously, soil structure also plays an important role, as coarse soils (e.g., sandy soils) tend to allow greater infiltration rates than fine soils (e.g., clays). In contrast, coarse soils store less water than fine soils but fine soils have a reduced capacity for water uptake by plants.

Water bodies.

Precipitation runs off into streams or lakes. Water that has infiltrated into soils and eventually into groundwater may also find its way, often over long periods, to streams and lakes, or seeps which may form wetlands. Open bodies of water have high rates of evaporation (E), but they often do not exceed the evaporation and transpiration (ET) of areas with dense plant cover with no water limits (e.g., wetlands, or well irrigated vegetation like crops or golf courses).

Bare soil.

The role of bare soil in the watershed mass balance is one of runoff, infiltration and evaporation. The amount of runoff from rainfall or snowmelt is dependent on texture of the bare soil, coarse soils having better infiltration. Water near the surface of wetted soils usually is lost through evaporation (E).

Bare rocks or impervious layers.

Water falling on impervious layers in the landscape runs off with some evaporation. Snow fall may accumulate on these layers which are common in alpine areas. Snow melt eventually runs off to lower elevations where it infiltrates into soil. Rocky areas, again common in alpine areas, may also allow infiltration of water down through the rocky aggregates which saturates subsurface soils and contributes to groundwater.

The composition of land cover plays an obvious role in how much water moves through the watershed. Modifications of this cover, through natural processes such as fire and floods, or human activities will directly affect the quantity of water leaving the watershed as well as its quality. The quality of water within and leaving a watershed often is directly related to vegetation cover along with human activities on the watershed. This will be discussed later under changes in land cover or land use, as well as "other watershed outputs".

Soils and Geology in Groundwater Hydrology.

This section will discuss in more detail the role of soils, geology and groundwater in watershed hydrology and hydrological mass balance. The role of soils in water availability to plants was discussed above. Soils are one of the primary water storage bodies in the watershed (S), second perhaps to groundwater (GW). The unsaturated or vadose zone of soils holds water that infiltrates from precipitation inputs to the watershed. Water in this zone is available to plants. Water entering this zone may saturate the soil and move deeper into the groundwater, a saturated zone below the vadose zone. Depth to groundwater is a function of both how much water infiltrates through the vadose zone and the depth of bedrock. Thus, geology of watersheds, both the topography of the watershed and the depth to bedrock are important to water runoff, infiltration, and storage. Shallow bedrock tends to keep the groundwater level near the surface, while deep bedrock often overlain by deep alluvial soil, as found in broad valleys, may have a deep groundwater level (or aquifer).

Through capillary action, groundwater wets the soil immediately above it creating a wetted capillary fringe which is often tapped by phreatophytic vegetation like riparian species (e.g., cottonwoods). Groundwater moves down hill eventually exiting into streams, lakes or seeps. The length of time that water remains in groundwater varies, but it is often years. Thus, the quantity of groundwater exiting to recharge rivers will be influenced by precipitation patterns and hydrological events from previous years. Consequently, droughts that last several years may not be evident in declining groundwater recharge of rivers for some time, and return of high recharge of rivers following wet years after a drought may also not be evident for several years after the wet years commence.

River Systems: Response to and Control of Watershed Outputs.

River systems include the river, its channel and banks and the riparian areas on the margins (part of the floodplain). Water moving through a watershed eventually becomes part of a small stream (first order stream). These small streams then join and form larger streams (increasing stream orders) which eventually leave the watershed. If one wanted to expand this thinking, the watershed becomes as large as that of the

Missouri. Columbia, Colorado or Mississippi Rivers. For our purposes, all discussions relate to the size watershed that watershed groups in Montana are concerned with.

Because much of the precipitation in Montana falls as snow, river hydrographs (i.e., the shape of a graph of flows in a river) are considered "snowmelt hydrographs" which have a peak in late spring (see Figure 2). Often the hydrograph will have a small peak in the spring when lowland snows melt and then a high peak in late May to mid-June when high-elevation snow packs melt, saturating soils, and recharging groundwater, all of which cause a relatively rapid increase in stream flows.

High flows in streams reshape stream channels, move sediment downstream and trigger recruitment and maintenance conditions for riparian vegetation. In turn, riparian vegetation may reduce flood magnitudes, filter sediment from uplands and enhance groundwater recharge along rivers. Maintenance of the riparian vegetation buffer zone along rivers is critical if water quality, bank stability and wildlife habitat is a goal of watershed management (see Figure 3).

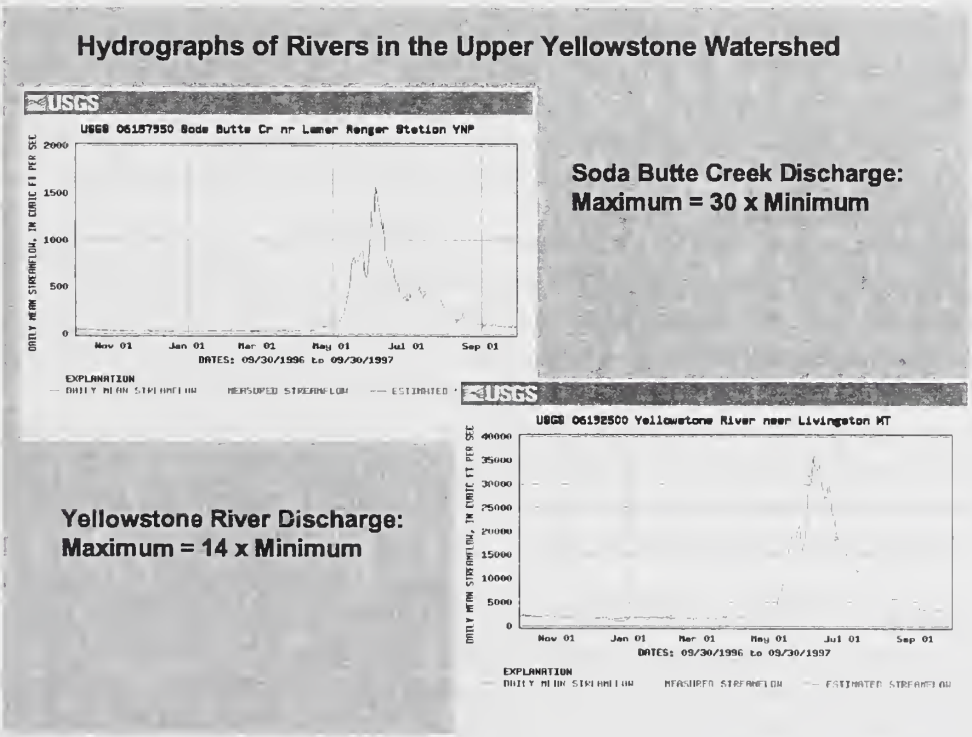
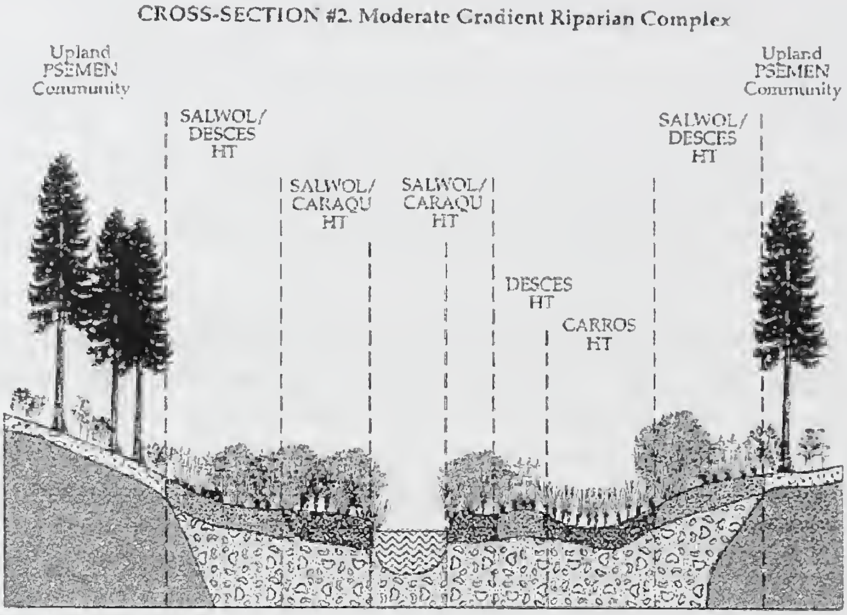


Figure 2. Hydrographs of rivers in the Upper Yellowstone watershed showing snowmelt peaks. The early short peak is a result of low elevation snow melt.



From Hansen et al. 1995

Figure 3. Riparian cross section showing interrelationship of stream and vegetation.

Land Use and Watershed Function.

The above discussion has addressed watersheds from a natural, undisturbed perspective. This is an unrealistic approach as most watersheds in the West have been altered in some fashion by human activities, even those in Wilderness or National Parks. Some watersheds have been altered more than others, and it is the level of modification that needs to be addressed. Fires, for example, alter watersheds sufficiently to modify watershed hydrology and the hydrological mass balance. Loss of vegetation cover will not only reduce evapotranspiration by plants, but also increase the magnitude of runoff until vegetation reestablishes. Along with runoff will be sediment and nutrients as soils are directly exposed to rainfall and snowmelt.

Other forms of vegetation and landscape alterations may also change the hydrology and ecology of a watershed. Timber cutting, grazing, and establishment of residential areas in the mountains, as examples, all alter land or vegetation cover and soil stability which in turn influence the amount of interception, evapotranspiration, runoff, and infiltration on the watershed. This, in turn, affects the amount of water recharging groundwater and thus the amount of water recharging rivers, lakes, and seep and wetland areas.

Other Watershed Outputs.

We have mentioned changes in sediment loads in rivers as land cover changes either naturally from fires, for example, or from human activities. Watersheds are quite resilient and have the ability to absorb many of nature's perturbations along with those from human activities. However, loading watershed soils, groundwater or streams with chemicals at levels well above background levels may eventually reach thresholds whereby the watershed can no longer absorb the perturbation and discharges from the watershed may be considered to be contaminated. Examples of this can be found in watershed where mining altered the landscape a century ago and today acid drainage and heavy metals contaminate the streams. Increasing residential development with septic systems may saturate soils and groundwater with mobile nutrients like nitrates that the watershed can no longer absorb, even the riparian buffer strip, and rivers leaving the watershed then may show elevated levels of these contaminants. Proper planning and management of these potential perturbations can alleviate their impacts.

Other Human Influenced Processes and Responses

Hydrological processes are often directly influenced by human activities. Some are discussed above. Water yields from watersheds may be greatly modified by land use changes, dams and diversions. When water yield is reduced, dilution of contaminants is also reduced, and available water to downstream water rights holders may be compromised. In some watersheds, water yield may be increased through augmentation, for example, through trans-basin transfers or reduction of vegetation cover. Human activities may also increase sediment yield from watersheds through disruption of processes that stabilize sediment along streams such as stream bank destabilization and riparian vegetation removal. In other cases sediment may be trapped within the watershed behind dams. Natural dams formed by beavers also trap sediment and tend to produce higher water quality levels. Altered hydrology in watersheds may also create establishment sites for invasive plant species.

Healthy Watershed.

A healthy watershed should continue to maintain all the natural functions found in a natural, unmodified watershed. These include properly functioning water bodies as well as healthy vegetation cover. These are intimately linked, and management or change in one will change the other. Other management concerns to address a properly functioning watershed should include goals to maintain proper hydrological conditions of streams and low levels of groundwater and stream contamination. It is impossible to manage or control only one aspect of a watershed without influencing other watershed attributes. The watershed functions as a unit, like an organism, with many apparently separate parameters that are, however, inseparable. Thus, if we return to our original hydrological mass balance equation: $P - ET +/- S +/- GW = Q$, we see that all of these parts of the equation may be influenced by natural and human caused perturbations and alterations of the watershed. The magnitude of the output of the watershed (Q) is thus dependent on how we manage the watershed.

BIG HOLE DROUGHT MANGEMENT PLAN

Big Hole Watershed Committee, Southwest Montana

BIG HOLE WATERSHED COMMITTEE

The Big Hole Watershed Committee (BHWC) was established in 1995. The BHWC was formed in response to local ranchers requesting assistance from the state of Montana for developing a coordinated effort to address the resource issues of the Big Hole River. Specific issues facing the community at that time include: drought conditions, a declining fluvial Arctic grayling population and water quality and quantity concerns.

The committee is composed of 22 official members who represent diverse interests including: ranching, utilities, local government, sportsmen, conservationists, tourism, and outfitters. In addition to the official members, local, state and federal agencies participate in the watershed committee as technical advisors. The BHWC is a consensus driven, multi-stakeholder entity, which works closely with the Big Hole River Foundation (a nonprofit, conservation organization) state and federal agencies and other organizations on watershed restoration and management plans. The BHWC functions as an open forum for watershed issue discussions, a resource for assisting private landowners with management decisions, a clearing house for water resource information, a liaison between management agencies and the public and a catalyst for voluntary conservation and enhancement efforts.

The Big Hole basin (HUC 10020004) is located high on the continental divide. The 150-mile, undammed river is classified as a blue ribbon trout fishery and hosts a high recreation value for angler, boaters, tourists and residents. The semiarid watershed takes in over 2500 square miles or 1.6 million acre watershed, yet is home to less than two thousand people. The local economy is based on agriculture and dominated by cattle and hay production. Landownership in the Big Hole basin is approximately: Private 17%, USFS 67%, BLM 11%, State 5%.

BIG HOLE DROUGHT MANAGEMENT PLAN

The Big Hole is subject to low flow conditions and high temperatures during the summer months. The BHWC has developed a Drought Management Plan to mitigate low flow and high temperature conditions throughout the basin. The Drought Plan also benefits the last self-sustaining population of fluvial Arctic grayling in the lower 48. The grayling were petitioned for ESA listing and found to be “warranted but precluded” due to an interagency restoration plan, *Montana Fluvial Arctic Grayling Restoration Plan* (1995), and strong landowner support of the BHWC Drought Management Plan (1997).

The Drought Management Plan is organized into 3 river reaches with corresponding critical flow levels in cfs and/or water temperature thresholds not to exceed 70° F for more than 8 hours per day for 3 consecutive days. The designation of the critical flows is based on wetted perimeter calculations in relation to available habitat. The three reaches also correspond to ecological and morphological differences in the basin.

River Reach	Flow Trigger #1 Raise awareness	Flow Trigger #2 Prepare for limitations	Flow Trigger #3 Implementation /Fishing closure
UPPER			
Rock Cr. Rd – Mouth of N. Fork	60	40	20
MIDDLE			
Mouth of N. Fork - Dickie Bridge	100	80	60
LOWER			
Dickie Bridge - Confluence with Jefferson	250	200	150

*Flows are measured in cfs.

The plan outlines roles and responsibilities for both the Big Hole Watershed Committee and the Montana Department of Fish, Wildlife and Parks, the Department of Natural Resources and Conservation and Natural Resources Conservation Service. In general, the agencies are responsible for providing data on snowpack, precipitation and flows in an accurate and timely manner. The agencies are the technical side of the equation while the Watershed Committee works with landowners and the general public, educating and promoting cooperation.

Flow trigger #1 initiates a conference with affected agencies and the Big Hole Watershed Committee to review current conditions and trends. The Watershed Committee uses a phone tree to inform landowners throughout the basin of the current conditions and forecast. The cooperators are asked to reduce water use where it is unnecessary.

Flow trigger #2 sends out a notice to anglers and outfitters requesting angling activities to be limited to the morning hours, when angling pressure is least stressful to fish. Media new releases are issued to local and state sources. Water users are asked to prepare for low flows and plan for alternative water source use. Conservation practices are strongly encouraged at this level.

Flow trigger #3 causes a fishing closure for that reach. The closure is an action by the MT Fish, Wildlife & Parks Commission. Municipalities initiate watering restrictions and landowners are asked to reduce and / or cease water diversions. The media is contacted for disseminating the fishing restriction and severe flow levels.

The angling closures are lifted when the flows maintain 40 / 80 / 200 cfs for seven consecutive days.

In order to provide support to water users a Stockwater Well Program has been developed. The program has been working with landowners since 1997. To date our efforts have developed 17 wells and 4 springs. These alternative watering sources are located on larger diversion ditches in the upper basin. Cooperating landowners use the wells to water cattle and turn off their diversions. The stockwater well program can contribute 20-30 cfs to instream flows during the later part of the summer. The wells also remove cattle from river / riparian areas and provide additional management options for more intensive grazing.

RESULTS

During the Summer 1999 the Drought Management Plan and supporting stockwater well program was successful at increasing in-stream flows by 20 cfs during a critical low water period.

The Drought Management Plan and stockwater well program have contributed to the Department of Natural Resources and Conservation's decision to "suspend indefinitely" the chronically dewatered classification of the Big Hole River.

During 2000, drought conditions and below average snowpack caused the upper basin to hit critical low flow conditions in late June. The BHWC implemented the Drought Management Plan on June 29, 2000 with a fishing closure in the upper river. Wisdom area ranchers voluntarily reduced water use, returning over 20 cfs to the river. Through July the upper reach has maintained flows between 20 – 45 cfs. Although the flows did drop to severely low levels (i.e. 7-10 cfs) deep pools were maintained and we avoided lethal conditions for fish.

Comparing conditions in 2000 with those in 1988 gives an indication of how effective the voluntary Drought Management Plan can be.

- The snowpack on May 1, 1988 was 67% of normal and in 2000 it was 66% of normal.
- Total water year precipitation at Wisdom 1988: 77% of normal and in 2000: 66% of normal. Average monthly streamflow compare in the upper basin was 6 to 18 cfs greater in 2000 than in 1988.
- Average monthly streamflow compare in the lower basin was 37 to 74 cfs greater in 2000 than in 1988.

2001 provided yet another trial. Drought conditions began early, by June we were hitting low flows in the upper basin. The upper basin was closed to angling on June 27. The middle basin reached critical flows in August and was closed to angling on August 28. Mean daily flows in the lower reach did not drop below 150 and thus a fishing closure was avoided.

2002 drought conditions were not as severe as 2000 and 2001. Snowpack in the upper Big Hole in mid-March was 81% of normal in 02 compared to 58% in 01 and 86% in 00. The snow coverage was patchy, with the N. basins receiving more than the southern basins. The Jefferson basin was 70% of normal in 2002. Clark Canyon had 90,000 acre feet in April compared to a normal level of 151,000 acre feet. June snows and August rains prevented disaster this year. Peak flows for the Big Hole and Jefferson were about 2x last years levels.

Low Flow Levels

Location	Flow level	days 2002	days 2001
Wisdom	<20 cfs	6	66
	<10 cfs	0	40
	Minimum	13cfs	6cfs
Melrose	<150	0	
Jefferson	<100 cfs	12	41
	<50 cfs	2	27
	Minimum	44cfs	21 cfs

Grave Creek Watershed
Upper Kootenai River Drainage
Northwest Montana

John Muhlfeld
(jmuhlfeld@riverdesigngroup.net)
River Design Group, Inc
911 Wisconsin Avenue
Whitefish, Montana 59937

Executive Summary

Grave Creek is an important bull trout spawning stream in northwest Montana (MFWP 2003), and is classified by the Montana Department of Environmental Quality as a water quality impaired stream requiring Total Maximum Daily Load (TMDL) development. Probable causes of impairment include bank erosion, fish habitat and channel degradation, siltation, flow alteration and dewatering. Sources include agriculture (grazing and range related sources) in the lower valley and silviculture (roads, riparian harvest) in the upper forested portion of the watershed. Several restoration activities, including both passive and active restoration techniques, have been implemented and are planned in the basin to address the sources of water quality impairment. A TMDL and Water Quality Restoration Plan (WQRP) are under development by the Kootenai River Network in cooperation with MDEQ, River Design Group, Inc. and the Friends of Grave Creek. Since 1999, several projects have been implemented in the basin to address water quality and aquatic habitat impairment.

Problem Definition and Assessment Techniques

Cause of Impairment	Assessment Techniques
Siltation and Bank Erosion	1. Field mapping of major sediment sources, assessment of riparian stand conditions and proximity to major arterial roads and timber harvest units 2. Arc GIS spatial analysis to link sediment sources with land use practices
Channel Modifications	1. Channel departure analysis using historical and current aerial photography 2. Rosgen Level III (1996) field surveys
Fish Habitat Degradation	1. R1-R4 Fish Habitat Inventory stratified by Rosgen channel type
Flow Alteration, Dewatering, and Fish Passage	1. Water right investigations and ditch loss studies 2. Wetted Perimeter Study (Nelson 1980) 3. Fish XING (USDA 1998)

Accomplishments

Project	Project Details
1999 Fish Passage Restoration	Glen Lake Irrigation District Dam Removal and Fish Screen Installation
2001 Demonstration Project	1,000-ft. Channel Restoration and Irrigation Improvements
2002 Grazing Management Plan	Grazing Management Plan Developed and Implemented
2002 Phase 1 Restoration Project	4,300-ft. of Channel and Fish Habitat Restoration
2003 Phase 2 Restoration Project	Final Design Completed for 4,800-ft. Reach – Implementation Summer 2004
2003 TMDL Plan Development	TMDL and Water Quality Restoration Plan Development for Watershed

Grave Creek TMDL Development

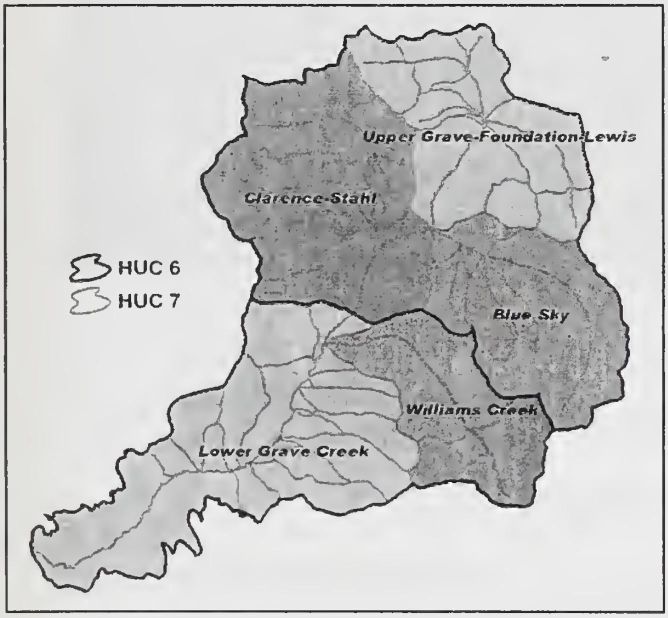


Figure 1. GIS Map of HUC 6 and HUC 7 sub-watersheds within the Grave Creek TMDL Planning Area.

The watershed area is approximately 66 mi^2, with elevations ranging from 7,500-ft. at the watershed divide, to approximately 3,200-ft. at the confluence with Fortine Creek.

Major headwater tributaries have been extensively managed for commercial timber harvest by the US Forest Service. The lower private reaches support agricultural and private residential land uses that have collectively altered the stable form and function of the Lower Grave Creek sub-watershed.

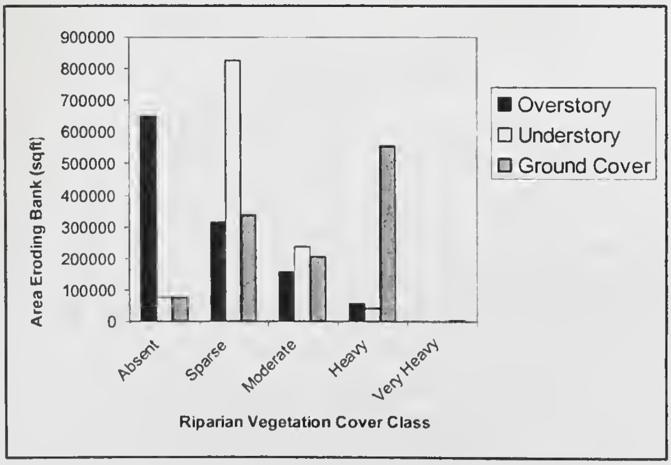


Figure 2. Results of GIS analysis relating area of eroding streambanks to riparian condition class.

Streambank erosion sources were mapped during the fall 2003 throughout all major HUC 6 and HUC 7 sub-watersheds. Riparian health was evaluated at each major site.

Results indicated a strong correlation between riparian stand structure and area of eroding streambank. In general, riparian areas dominated by absent or spare overstories (large trees), and sparse understory shrubs contributed a majority of the eroding surface area to the channel network.

Implemented Restoration Projects

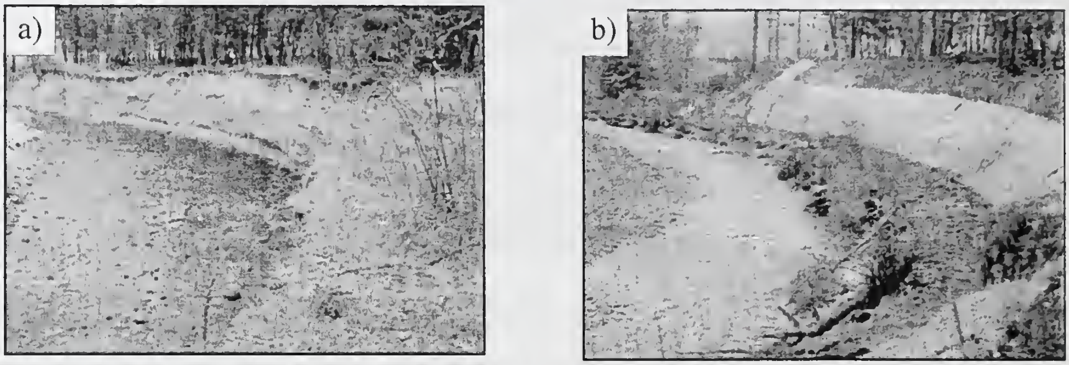


Figure 3. Example high terrace erosion (a). The terrace was stabilized and the aquatic habitat improved by the application of active restoration techniques(b)

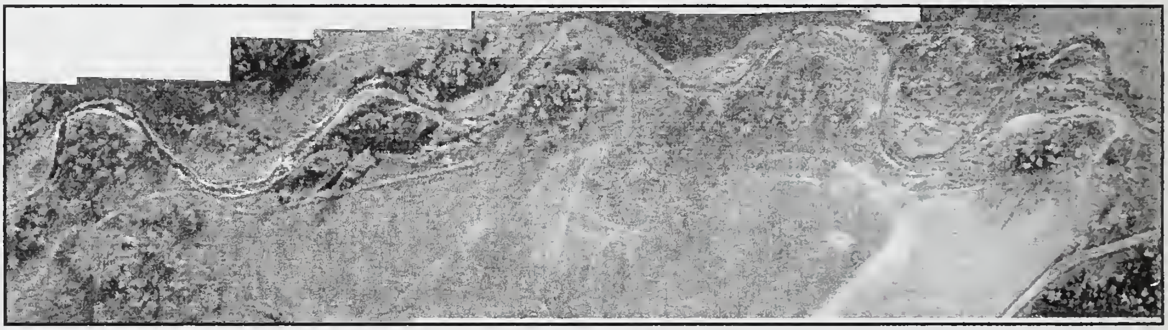


Figure 4. Post construction aerial view of Phase 1 Project Area

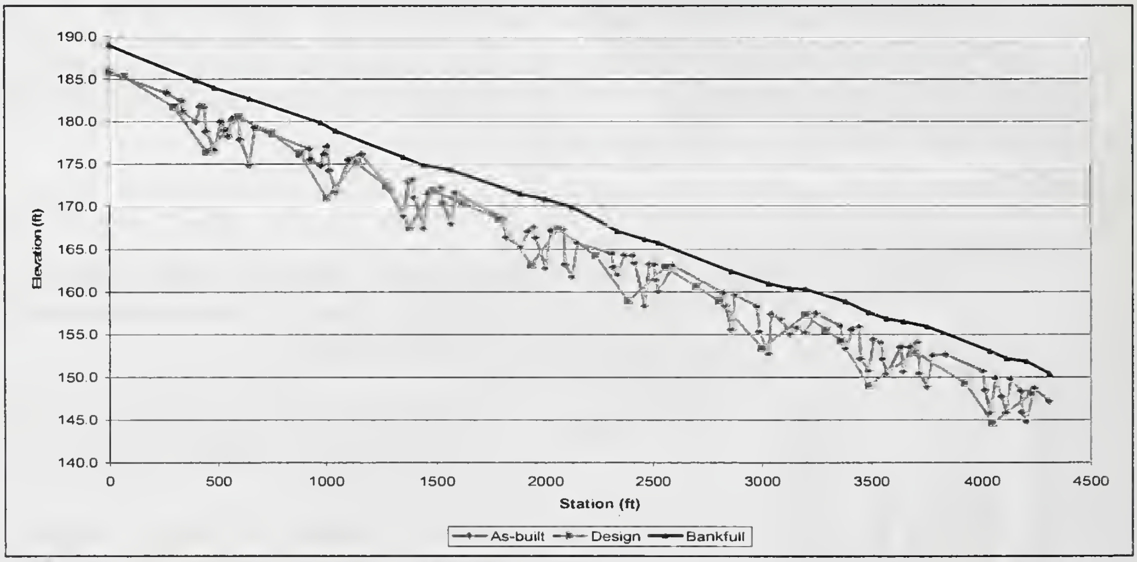


Figure 5. Pre-construction and as-built longitudinal channel profile for the Phase 1 Grave Creek Restoration Project.

Keys to a Successful Watershed Group

Overall Intent and Structure

Why do some watershed groups succeed and others struggle endlessly? These two sessions are for watershed groups and scientists interested in learning more about the key elements of a healthy, well-functioning group. In each session, a panel of three will share and compare personal insights and lessons from experience. The intent is to share *practices*, *processes* and *know-how* from watershed groups that have organized to meet the long-term needs of the land and people they serve.

Outcomes: An improved understanding of: (1) how watershed groups can be organized best for success and sustenance over time; (2) 'good' and 'bad' approaches and techniques used to meet the needs of the land and people they serve.

Focusing Questions: Panelists will be asked to address the following:

1. What was the defining issue of challenge that brought your group together?
2. Where do you get the resources (people, money, consultants, training, etc.) to do what you need to do?
3. As you deal with current and emerging challenges and issues in your basin, how do you use scientific information to solve your watershed problems?
4. What is your group's unifying vision and/or common purpose? What obstacles have you overcome to find and sustain it? Is your group clear about these (i.e. purpose and vision)?
5. What activities and projects has your group done that have continued to engage the larger community?
6. What are the three most important things that HAD to happen for your group to be successful?
7. Please give us your top three nuggets of advice for other watershed groups.

The Watershed Groups

Buffalo Creek
Carol Ekarius

1. What was the defining issue or challenge that brought your group together? Three things happened in 1996 to bring our group together:

1. The Buffalo Creek fire burned in the watershed, with very serious post-fire flooding (killed 2 people, washed out homes, and filled a municipal water reservoir with 200+ years of sediment in one event); 2. The Safe Drinking Water Act was amended to require municipal water providers to assess and plan for the protection of their source water, and; 3. The USFS began an Environmental Assessment for Wild and Scenic Designation on segments of the upper South Platte River. Denver Water and the City of Aurora hired Brown and Caldwell to facilitate a series of meetings with stakeholders to discuss issues and to find common ground. Out of those

meetings, eleven governmental entities initially signed a Memorandum of Understanding, agreeing to work together to protect the water quality and ecological health of the watershed by starting a nonprofit group.

2. Where do you get the resources (people, money, consultants, training, etc.) to do what you need to do?

Most of our money to date has come from Federal grants, with local government entities (including Front Range Water Providers) providing in-kind support and some cash match. We have recently hired a development director, and are starting to seek more broad-based general donations and memberships. The nature of our watershed has helped in this respect: 75% of the residents of Colorado get at least some of their municipal water through our watershed, either as native flows or as trans-basin diversions delivered through the Upper South Platte. For example, the City of Denver and the suburbs that it provides for gets 85% of their water and the City of Aurora gets 98% of their water through the Upper South Platte. We have also received some corporate and foundation grants and gifts. For example, Toyota donated a new pickup truck to us; Phillip Morris donated $15,000.00, and Jimmy Buffet's Singing for Change Foundation donated $10,000.00. We have had good luck engaging volunteers for efforts in the watershed, especially after last year's Hayman Fire, which burned 137,000 acres in the watershed.

3. As you deal with current and emerging challenges and issues in your basin, how do you use scientific information to solve your watershed problems?

We work with various partners to share data between agencies and entities that are doing monitoring and/or research in the basin. We use the research to help design projects, and use monitoring to follow up on work. We have become big fans of photo-point monitoring because it works well for many of the projects we are working on.

4. What is your group's unifying vision and/or common purpose? What obstacles have you overcome to find and sustain it? Is your group clear about these (i.e. purpose and vision)?

Our vision is *A healthy watershed—now and in the future*, and our mission is *to protect the water quality and ecological health of the Upper South Platte Watershed through the cooperative efforts of watershed stakeholders, with emphasis on community values and economic sustainability*. Our main obstacles have been funding during certain critical periods, which is why we are working on developing broader funding support, and full integration of all stakeholders into the process.

5. What activities and projects has your group done that have continued to engage the larger community? (Describe the working relationships of the folks regularly involved in your partnership and the 'fruit of their labors.')

We have had a very active environmental education component since we started, not only supplying materials for schools, but supplying staff support to teachers to utilize the materials. Since August of 2002 we have had over 40,000 manhours of volunteer time on fire rehab, and have coordinated the Hayman Recovery Assistance Center. We have worked with some "affiliated" subcommittees, like the South Park Wetlands Focus Committee (SPWFC), and the Upper South Platte Restoration Project Committee (USPRP). These multi-agency committees were in existence prior to our time, but have blended with us for greater outreach and partner development. For example, through the efforts of the SPWFC we are currently leading efforts on restoration along 20 miles of the Tarryall River, while The Nature Conservancy and Colorado Open Lands (a state land trust) lead efforts on acquiring conservation easements along the river. This relationship has effectively utilized the specialized expertise of various partners in a cooperative manner.

6. What are the three most important things that HAD to happen for your group to be successful?

1. We had to have some members that fully supported this thing in the early years. It took about 5 individuals with serious dedication to get this thing off the ground and keep it there. 2. We had to develop a strategic plan. This document helped guide our efforts, and was critical to fundraising. 3. We had to have a dedicated staff that was capable of responding to the stakeholders when they needed somebody to be there for them.

7. Please give us your top three nuggets of advice for other watershed groups.

- Success in this arena is about relationships and trust—and they take time to build. Collaboration is not easy, but it is effective.
- You have to have at least one part-time staff person working for the group—not somebody working for one of the member agencies and providing staff support on the side—if you want to succeed in the long run.
- When a catastrophe strikes, be ready to jump in with both feet. It might damn-near kill you, but if you survive you will be stronger for it.

Carter County Conservation District
Duane Richards

1. What was the defining issue or challenge that brought your group together?
   - The concern with an Impaired Stream.
   - The multi-use of the watershed

2. Where do you get the resources (people, money, consultants, training, etc.) to do what you need to do?
   a. Department of Environmental Quality
   b. Involved partners: BLM
      American Colloid (Bentonite Mining Company)
      NRCS
      223 Grant Dollars

3. As you deal with current and emerging challenges and issues in your basin, how do you use scientific information to solve your watershed problems?
   - We are hoping the nine years of data will clarify if our concerns are due to management practices or just natural.
   - We have weather stations that are also collecting data and we are hoping this element will color in our picture more as we are still learning about our watershed and what is affecting it.
   - There is also range data and soil information that assist in our watershed management plan.
   - We are hoping the data will allow us to do come comparisons.

4. What is your group's unifying vision and/or common purpose? What obstacles have you overcome to find and sustain it? Is your group clear about these (i.e. purpose and vision)?
   - To have a unified monitoring program and to evaluate the impacts of the existing and future uses in the watershed.
   - The obstacles we have had to overcome is the lack of communications, hidden agendas, and dollars.
   - Yes, the group is clear on the objectives and vision of this group. We have had some growing pains, but it has strengthen the group and created a stronger focus.

5. What activities and projects has your group done that have continued to engage the larger community.
   - Use of Weather Stations
   - Tours of the watershed
   - Web Page
   - Presentations
   - Wetland development (possible construction)

The relationships of the individuals in the group are still establishing themselves. We are working on effective and honest communications, creating a unified front, and focusing strictly on the health and welfare of the watershed. We are just starting into hopefully seeing the "Fruits of their labor".

6. What are the three most important things that HAD to happen for your group to be successful?
   - Involving all interested parties
   - Establishing a unified vision
   - Honest communications

7. Please give us your top three nuggets of advice for other watershed groups.
   - COMMUNICATIONS
   - HONEST COMMUNICATIONS
   - TEAM EFFORT—NO PERSONAL AGENDA'S

Madison Valley Ranchlands Group

1. What was the defining issue or challenge that brought your group together?

Increasing land values due to subdivisions, diminishing returns to production agricultural operations and the desire by some surviving ranchers to find ways to make ranching sustainable.

2. Where do you get the resources (people, money, consultants, training, etc.) to do what you need to do?

There was an interest by some nonprofit groups to see ranching preserved in the Madison Valley and they provided grants, advice and training. Those groups were RMEF, The Nature Conservancy of Montana, Artemis Common Ground and the Sonoran Institute. There were also a couple of landowners who donated to help sustain the effort.

3. As you deal with current and emerging challenges and issues in your basin, how do you use scientific information to solve your watershed problems?

It is necessary in applying for grants and working with collaborative partners on issues, to have good scientific information to verify the defining elements of those issues. We examine the scientific information to understand how it relates to or verifies the parameters or details of challenges.

4. What is your group's unifying vision and/or common purpose? What obstacles have you overcome to find and sustain it? Is your group clear about these (i.e. purpose and vision)?

Our common purpose is to maintain the ranching industry and the agricultural nature of the Madison valley. Our vision is to lead a collaborative effort to address and seek resolution of the various issues which threaten to change those characteristics of the watershed which make it such a desirable place to live. In that context, we also address economic, wildlife and habitat issues which are all interrelated with the well being of the watershed.

5. What activities and projects has your group done that have continued to engage the larger community? (Describe the working relationships of the folks regularly involved in your partnership and the 'fruit of their labors.')

We have a weed committee which addresses the threat of noxious weeds throughout the valley. We hold an annual valley fund raiser which has become a premier social event for the watershed. There were over 400 people attended in August 2003. We have been holding wildlife management meetings over the past two years to provide a forum for the concerns over elk management. These meetings are attended by 20 to 40 landowners and agency personnel. The resulting program involved 112 people last year and has 120 people involved for this year. We are involved in an ongoing land use planning effort to address

ways to limit development in some sensitive areas where there are already approved subdivisions. All of the meetings which have led to these results were collaborative in nature. All stakeholders were invited and encouraged to be part of the process.

6. What are the three most important things that HAD to happen for your group to be successful?

1. **Local people had to come in contact with people from outside the area to initiate the process of thinking outside the box about issues of concern.**
2. Local people had to commit to the collaborative process. 3. Key people had to travel to other areas and see challenges and processes that were relative to local issues.

7. Please give us your top three nuggets of advice for other watershed groups).

1. Collaborate 2. Collaborate 3. Collaborate

Big Spring Watershed Partnership
Richard Opper

1. What was the defining issue or challenge that brought your group together?

The defining issue for the Big Spring Creek Watershed Partnership has been to restore the ecological health of Big Spring Creek at the Brewery flats site south of Lewistown. This site was characterized by a mile-long section of the creek that was channelized almost a century ago, former industrial activity including an oil refinery and a railroad switching yard, and contamina-tion of sediments and fish by such things as PCBs. Restoring a meandering stream channel and locating and cleaning up the hazardous wastes have been the focus for a number of years of the Watershed Partnership. Also constructing trails and developing a community wide environment-tal education program for the creek have been important aspects of this effort. We have made considerable progress on this. At this very moment, the final work to clean-up soil contaminants is ongoing in this area, a culmination of many years' efforts to reclaim this site into a greenbelt and functioning riparian area and floodplain. This is certainly a cause for celebration. Hundreds of volunteer hours and nearly a million dollars have been spent on this effort.

2. **Where do you get the resources (people, money, consultants, training, etc.) to do what you need to do?**

A Lewistown businessman chairs the group, and there are many citizen participants who volunteer their time. Agency participation includes NRCS, FW&P, DEQ, DNRC and representatives of the city and county commissions. Our efforts are funded by private donations, in-kind contributions from the city and county, and a variety of grants from DEQ, DNRC, EPA, and the Central Montana Foundation. In addition, NRCS has provided technical and cost-share assistance to landowners for stream and riparian improvements on almost 20 miles of watershed streams (our booth will display this). The

FW&P, F&WS, and DOT provided funding for the restoration project at Brewery Flats. Groups such as the Society of American Foresters, Pheasants Forever, Trout Unlimited and Walleyes Unlimited have also provided funding for such things as tree plantings and trail building activities.

3. **As you deal with current and emerging challenges and issues in your basin, how do you use scientific information to solve your watershed problems?**

The use of scientific information has been significant in our efforts, especially with the testing of soils, surface and groundwater for PCBs and other contaminants. EPA, FW&P, DEQ, Montana Power Company, and DNRC have all provided funding for the testing and clean-up of contaminants. Water quality monitoring has been ongoing since the early 1990s to develop baseline and trend data for Big Spring Creek and important tributaries. In addition NRCS and FW&P have several stream/riparian projects that are being monitored for changes in fish populations in pre-project and post project work.

4. **What is your group's unifying vision and/or common purpose? What obstacles have you overcome to find and sustain it? Is your group clear about these (i.e. purpose and vision)?**

The Watershed Partnership's unifying vision and purpose is to maintain, improve, and enhance Central Montana's greatest treasure - Big Spring Creek. Potential obstacles include apathy, lack of funding, and lack of scientific data on the extent of contamination problems. However, the Watershed Partnership has helped provide the means for people to work together to overcome each of these obstacles.

5. **What activities and projects has your group done that have continued to engage the larger community? (Describe the working relationships of the folks regularly involved in your partnership and the 'fruit of their labors.')**

The restoration of Big Spring Creek at Brewery Flats has engaged the community to a great extent. This was initially and primarily a citizen-led effort. Federal, State and local governments have been active participants throughout the process. Additionally, the local schools have involved their students in many facets of our work, such as stream restoration activities, water quality monitoring, and developing a creek-based education program for the community. Restoration of the channelized portion of the creek has greatly enhanced fishing opportunities in the Brewery Flats portion of the creek. Several miles of heavily-used walking trails have been constructed. These two activities alone have engaged the community more than we would have thought possible a couple of years ago. The latest project the Watershed Partnership has begun working on is to restore a free-flowing stream through downtown Lewistown where the creek now flows under buildings in a decaying concrete tunnel. This "daylighting" project could enhance the beauty and economic opportunities for downtown Lewistown.

6. **What are the three most important things that HAD to happen for your group to be successful?**

1. Local citizens had to be engaged in the work and enthusiastic about their involvement in helping restore the stream. This was accomplished by developing common goals that were important to the participants 2. Finding funds through various means to get things done. Restoring meanders to the channelized portion of the stream required considerable funding, for example. This funding would not have been available had our citizens not been engaged in the work. 3. State and federal agencies such as NRCS, FW&P, DEQ had to be involved to provide the technical and scientific expertise the citizens often lacked.

7. Please give us your top three nuggets of advice for other watershed groups).
Several things have helped the Big Spring Creek Watershed Partnership succeed. The key to all of our success is the love and appreciation people in our community have for Big Spring creek. But love alone does not pay the bills. Some of the things that have led to success include the following:

Start with small projects that have a reasonable chance of success. Nothing builds momentum like a win, so pick your projects carefully. Instead of trying to remove a $10 million, hydropower-producing, flood-preventing dam to help a few more fish spawn, for example, start by trying to build a little more habitat, one project at a time. After you have a few successes under your belt and have built momentum, them you can tackle the dam.

Keep the meetings interesting and run them on a tight schedule. Nothing drives volunteers away faster than boring meetings. Have someone run the meetings who knows how to develop and stick to a tight agenda -- someone with good social skills who can diffuse controversy and can use humor effectively.

Recruit the right participants for the committees. If you are working on a fisheries restoration project, recruit the man or woman who fancies him or herself to be the best fisherman in your community (there may be several of these!). If you're considering daylighting a creek through the downtown area of your community, involve several influential downtown business men or women.

Finally, do not forget the words of Margaret Mead:
"Never underestimate the power of a small group of people to change the world, for it is the only thing that ever has."

Elk Creek and Lower Clark Fork Watershed Group
Mike Miller

1. What was the defining issue or challenge that brought your group together?

The major issue that resulted in the formation of the first watershed group I was involved with (Elk Creek Watershed Council) was the serious erosion problems resulting from two *major rain on snow flood events in 1995/1996. We were approached by Green Mountain Conservation District who suggested we form a watershed council. They educated the stakeholders on the watershed approach to solving stream problems, put us in touch with various agencies relative to funding assistance, and generally encouraged us throughout the process. Over the next several years, stakeholders in six other lower Clark Fork tributaries approached us for assistance in starting watershed groups for their drainages. These additional groups started both as a result of problems in each of the drainages, but also due to the fact that they saw that the Elk Creek Watershed Council was relatively successful in obtaining funding for restoration work and they realized that their input and participation as stakeholders, was critical to the success of each watershed council.*

2. Where do you get the resources (people, money, consultants, training, etc.) to do what you need to do?

There are a number of key "people" related resources involved in having a well functioning watershed council. The watershed council sponsor, in our case, the local CD (Green Mountain Conservation District) has been very supportive of the eight watershed councils that it sponsors. They sponsor virtually all of the numerous grant applications and administer every dollar of funding that is used by all the councils. The various agency representatives (DEQ, DNRC, NRCS, FWP, USFS, and others) assist in the preparation and review of grant applications and in obtaining numerous types of funding. They also provide general guidance on watershed assessments and restoration projects. Funding is one of the main concerns with any watershed group. Money is needed for basic operational expenses, to hire coordinators and consultants, to do restoration and management projects and to monitor those projects. Funding for our projects comes from numerous sources, but the majority is from 319 grants from DEQ, Watershed Planning Assistance grants from DNRC, Future Fisheries Improvement Program funding from FWP, and from the Avista Corporation, via programs established in its dam relicensing process. Having a good working relationship with consultants (hydrologists, fisheries biologists, revegetation experts, etc.) is also important since in many cases, these are the people a watershed group relies on to provide the scientific basis for future activities and projects in the drainage. They usually design and oversee most of the watershed projects that are proposed by the councils. Training is available via numerous avenues, from sessions at the MWCC annual retreat, to various agency sponsored events. I've found that having an environmental science background has helped greatly in my watershed work.

3. As you deal with current and emerging challenges and issues in your basin, how do you use scientific information to solve your watershed problems?

Scientific information is the basis for nearly every decision made in our watersheds. The process normally starts with a search of existing information available for the drainage, then an assessment is performed on the entire watershed by a consultant. Technical advisors for each watershed council (usually consisting of representatives of FWP, Avista, NRCS, and USFS, with expertise in fisheries, hydrology, forestry, soil *science/geology) provide any additional information they feel is appropriate for understanding the problems in a drainage, and provide guidance throughout the assessment and restoration process. We have recently been concentrating on the development of TMDL plans for DEQ and also performing stream restoration work that is more related to projects mandated through the Avista relicensing process. The bottom line is that every decision made by a watershed council in the lower Clark Fork, is based on the best scientific information we can gather.*

4. What is your group's unifying vision and/or common purpose? What obstacles have you overcome to find and sustain it? Is your group clear about these (i.e. purpose and vision)?

Early in the process of formation of each of the eight watershed councils in the lower Clark Fork, mission statements were developed. There seems to be a common thread in each of these councils, i.e., the protection, restoration and improvement of all natural resources in the watershed. Public education on watershed issues is also mentioned in a majority of the mission statements.

5. What activities and projects has your group done that have continued to engage the larger community? (Describe the working relationships of the folks regularly involved in your partnership and the 'fruit of their labors.')

When one thinks of watershed projects, the picture that appears is of a restored bank that had been previously eroding. We have completed numerous stream restoration projects in seven lower Clark Fork drainages. These projects mainly involve a select group of council members and the landowner where the project is located. It has been somewhat difficult to engage the community that does not live right on the creeks. We have had five "Know Your Watershed" workshops in the last six or seven years, a noxious weed workshops, a workshop for heavy equipment operators who do stream work, a workshop to educate realtors on natural resource issues, and a water festival for grade school children. These workshops have engaged the larger community to some extent.

6.What are the three most important things that HAD to happen for your group to be successful?

I think there has to be: 1) A driving issue or problem that stakeholders agree must be addressed; 2) A sponsor (such as the local CD), and a person who will take on the responsibility and extra work to organize the group; and 3) Funding to enable the group to pay for administrative expenses and also perform an assessment.

Evening Session

Watershed Spirit

Booth Sponsors
All Booths and Posters

Natural Resource Dialogue in the West – A Journalist's Perspective

Watershed Spirit Participants

Chippewa Cree Tribal Water Resource Department
(406) 395-4225
jay@cct.rockyboy.org

Natural Resource Information System
(406) 444-0534
tjabbenhaus@state.mt.us

Bitter Root Water Forum
(406) 375-2272
brwaterforum@bitterroot.net

Watershed Education Network
(406) 541-9287
water@montanawatershed.org

Montana River Action
(406) 587-9181
info@montanariveraction.org

Big Spring Creek Watershed Partnership
(406) 538-7401 ext. 116
Theodore.hawn@mt.usda.gov

Montana Wetlands Legacy
(406) 994-7889
thinz@montana.edu

Montana Salinity Control Association
(406) 278-3071
msca@3rivers.net

Big Hole Watershed Committee
Big Hole River Foundation
(866) 533-2473
cjlogan@in-tch.com

Montana Natural History Center
(406) 327-0405
mnhc@montana.com

Missouri River Conservation District Council
(406) 786-3286
2mattelin@nemantel.net

Blackfoot Challenge
(406) 442-4002
silent_bri@hotmail.com

Sun River Watershed Group
(406) 727-4437
arollo@mcn.net

Natural Resource Conservation Service
(406) 587-6742
lori.valadez@mt.usda.gov

National Park Service
(406) 587-1667
gary_weiner@nps.gov

Lower Tenmile Watershed Group
Lewis & Clark County Water Quality Protection District
(406) 547-8927
jwilbur@co.lewis-clark.mt.us

Cascade County Conservation District
(406) 727-3603 ext.125
cccd@mcn.net

Gallatin Local Water Quality District
(406) 582-3145
tcrone@co.gallatin.mt.us

Native Waters
(406) 994-3911
bsawyer@montana.edu

Bozeman Watershed Council
(406) 587-2406
montagne@mcn.net

National Center for Appropriate Technology
(406) 494-4572
mikem@ncat.org

Larix Systems, Inc.
(406) 458-0045
mteply@larixsystems.com

Watershed Consulting
(406) 862-3565
amy@watershedconsulting.com

Montana Water Center
(406) 994-1772
shiggins@montana.edu

Blue Water Task Force
(406) 994-7636
mdwhite@montana.edu

Montana Department of Natural Resource & Conservation
(406) 444-6783
drichard@state.mt.us

Montana Conservation Corps
(406) 587-4475
don@mtcorps.org

USDA Forest Service
(406) 449-5201 ext. 245
bstuart@fs.fed.us

Montana Watercourse
(406) 994-6671
mtwatercourse@montana.edu

Montana Association of Conservation Districts
(406) 443-5711
macd@macdnet.org

DTM Consulting, Inc.
(406) 585-0764
david@dtmgis.com

Confluence Consulting
(406) 585-9500
mmgowan@confluence.inc

Natural Resource Dialogue in the West: A Journalist's Perspective

Frank Allen
Institutes for Journalism and Natural Resources

The Institutes for Journalism and Natural Resources has a mission of "pursuing higher standards of environmental news coverage through expedition-style programs of learning and mentoring." They take a sharp look at how and why natural resources are reported in the press. Frank Allen is the lead author on the 2003 report: *Matching the Scenergy: Journalism's Duty to the North American West.* For the full report, please visit www.ijnr.org

Morning Session

The State and Future of Western Water and the Emerging River Restoration Movement

Natural Resource Policy and Trends: The Coming Challenges

- Sustaining Agriculture
- Growth and Development
- Water Quantity
- Water Quality

THE STATE AND FUTURE OF WESTERN WATER AND THE EMERGING RIVER RESTORATION MOVEMENT

Charles Wilkinson
Distinguished University Professor
Moses Lasky Professor of Law
University of Colorado

I. INTRODUCTION

The first part of this outline is a survey of sources on western water. It is not intended to be complete but rather to present an informal—and, I think, interesting and readable—collection of books, articles, and reports that can enlighten us on a subject that is so critical to the West.

The second section outlines western water law and policy as it existed in the mid-twentieth century. Then, in the 1970s and 1980s, westerners grew increasingly concerned about the state of their rivers. The third section provides sources for what I call the western river restoration movement, which has caused gradual but significant change in western water policy and law. It is diffuse, and varies from state to state, but the all or many of its themes can be seen in some fashion in every western state.

II. WESTERN WATER: A SURVEY OF THE SOURCES

A. History

Marc Reisner, Cadillac Desert: The American West and Its Disappearing Water (1986) (A bold, penetrating, and often witty study of western water development; named one of the one hundred best American nonfiction books of the twentieth century by Modern Library)

Wallace Stegner, Beyond the Hundredth Meridian: John Wesley Powell and the Second Opening of the West (1954) (The classic account of the career of John Wesley Powell, the dominant and creative figure in western water in the 1800s; in part, less a biography of Powell and more a study of his era, the second half of the nineteenth century—the formative years of water policy)

Donald Worster, A River Running West: The Life of John Wesley Powell (2001) (A full-scale biography of Powell)

William deBuys, Seeing Things Whole: The Essential John Wesley Powell (2001) (An edited collection, with commentary, of Powell's writings)

Roger G. Dunbar, Forging New Rights in Western Waters (1983) (The history of the development of western water law)

Donald Pisani, To Reclaim a Divided West: Water, Law, and Public Policy (1848-1902) (The formation and ideals of the reclamation movement)

Charles Wilkinson, Crossing the Next Meridian: Land, Water, and the Future of the West (1992) (The rise of the 19th-century land and water policies that continue to influence us today)

B. Law

David H. Getches, Water Law Rights in a Nutshell (3rd ed. 1997) (A concise treatment of western water law)

A. Dan Tarlock, James N. Corbridge, Jr. & David H. Getches, Water Resource Management: A Casebook in Law and Public Policy (5th ed. 2002) (A law casebook with edited court cases, history, and commentary)

Joseph L. Sax, Robert H. Abrams, & Barton H. Thompson, Legal Control of Water Resources (3rd ed. 2000) (Another standard law casebook)

A. Dan Tarlock, Law of Water Rights and Resources (2001) (A short treatise)

C. Policy

Report of the Western Water Policy Review Advisory Commission, Water in the West: The Challenge for the Next Century (1998) (The first major public commission on western water since the National Water Commission report of 1973; the report emphasizes sustainable use, national goals and local implementation, protection of existing rights, efficiency, and broader public participation, including watershed councils)

Sarah F. Bates, David H. Getches, Lawrence J. MacDonnell & Charles Wilkinson, Searching Out the headwaters: Change and Rediscovery in Western Water Policy (1993) (Reform of laws and policies that the authors see as outmoded and unduly extraction-oriented)

Gregory J. Hobbs, Jr., "Priority: The Most Misunderstood Stick in the Bundle," 32 Environmental Law 37 (2002) (The author, a former water lawyer and now a Justice on the Colorado Supreme Court, argues in favor of the prior appropriation doctrine and its ability to adjust to meet changing needs, including environmental protection)

Terry Anderson, Water Crisis: Ending the Water Drought (1983) (A summary and introduction to market-based economic techniques)

Water Marketing: The Next Generation (Terry L. Anderson & Peter J. Hill, eds) (1997) (Urging greater use of market-based economic techniques)

Daniel Kemmis, Community and the Politics of Place (1992) and This Sovereign Land: A New Vision for Governing the West (2001) (In these and other thoughtful works, Kemmis argues for less federal control of lands and waters and for lodging a greater sovereignty in the region)

Robert Glennon, Water Follies: Groundwater Pumping and the Fate of America's Fresh Waters (2002) (Using national case studies, many in the West, and warning of widespread and severe over-pumping; supports collaborative efforts among stakeholders)

Wallace Stegner, The Sound of Mountain Water (1985) (A collection of Stegner's conservation essays)

Sandra Postel, Last Oasis: Facing Water Scarcity (1997) (Chronicling stresses on water supplies)

Charles Wilkinson, "Western Water Law in Transition," 56 Colorado Law Review, 317 (1985) (Discussing reform in western water policy)

D. Particular Watersheds

John E. Thorson, River of Promise, River of Peril: The Politics of Managing the Missouri River (1994) (Comprehensive analysis of water policy in the Missouri River basin)

Philip L. Fradkin, A River No More: The Colorado River and the West (1996) (A broad-gauged and critical look at Colorado River water development)

David H. Getches, "Colorado River Governance: Sharing Federal Authority as an Incentive to Create a New Institution." 68 University of Colorado Law Review 573 (1997) (A comprehensive article on the Colorado River, arguing for new governance structures)

Keith C. Petersen, River of Life, Channel of Death: Fish and Dams on the Lower Snake (1995) (The impact of Snake River dams on the salmon runs)

Tim Palmer, The Snake River: Window to the West (1991) (An account of the people, places, and policies of the Snake River Watershed)

Paul Horgan, Great River: The Rio Grande in North American History (1984) (A classic history of the Rio Grande basin)

Norris Hundley, Jr., The Great Thirst: Californians and Water (2001) (Water scarcity and far-flung development in California)

E. Indian Rights

Michael Lawson, Dammed Indians: The Pick-Sloan Plan and the Missouri River Sioux (1982) (Impact of Missouri River development on tribal land and water rights)

Daniel McCool, Native Waters: Contemporary Indian Water Settlements and the Second Treaty Era (2002) (Indian water law, politics, and modern water settlements)

Lloyd Burton, American Indian Water Rights and the Limits of Law (1993) (Critical account of the modern water settlements)

John Shurts, Indian Reserved Water Rights: The Winters Doctrine and its Social and Legal Context, 1880s-1920s (2000) (History of the Winters doctrine in the early years, including the definitive account of the Winters case involving the Fort Belknap Reservation on the Milk River in Montana)

F. Literature

Norman MacLean, A River Runs Through It (1989) (What more need be said?)

Terry Tempest Williams, Refuge: An Unnatural History of Family and Place (1991) (An evocative book of the rise and fall of the great Salt Lake and its magnificent bird populations, all connected to the fortunes of Williams' family)

Wallace Stegner, Angle of Repose (1971) (Stegner's sweeping panorama of the West, with a central episode, set in the Boise Valley, depicting the idealism and challenges accompanying irrigation in an arid landscape)

Wallace Stegner, The American West as Living Space (1987) (A short, conceptual book about land, aridity, and how we should inhabit the West)

Bruce Brown, Mountain in the Clouds: A Search for the Wild Salmon (1982) (A story, at once sad and uplifting, of the wild salmon)

Freeman, Totem Salmon: Life Lessons from Another Species (1999) (Another important contribution to the literature of the Pacific salmon)

John Nichols, The Milagro Beanfield War (1974) (A boisterous novel about the importance of water in the West and how Hispanics in northern New Mexico lost their rights)

G. Philosophy

Aldo Leopold, A Sand County Almanac (1949) (In this, the most influential conservation book ever written, Leopold explicitly includes water in articulating his land ethic)

Edward Abbey, Desert Solitaire (1968) (Leaving aside Abbey's monkey wrenching and other assorted outrageousnesses, it is hard to deny the intellectual force of this book, which addresses, among many other things, the flooding of wild Glen Canyon under the waters of Lake Powell)

Edwin Way Teale, The Wilderness World of John Muir (1954) (A collection of the writings of John Muir, whose words about the natural world have endured into their third century)

III. WESTERN WATER POLICY AND LAW IN THE MID-TWENTIETH CENTURY

A. Dominance of the "Pure" Prior Appropriation Doctrine, Adopted in the Mid-Nineteenth Century

1. Stability of water rights for farmers and ranchers, and their communities, all dependent on irrigation

2. Priority system based on "first in time, first in right"

3. Creation of constitutionally-protected, vested rights at the moment of diversion

4. Rights attainable only for limited class of rights, called "beneficial uses"—agricultural, stock watering, industrial, municipal, domestic, power production

5. No protections for recreation, wildlife, or living rivers

6. Waste supposedly prohibited but conservation not enforced by courts or agencies

B. Dam-Building in Full Swing

C. Water Users Heavily Subsidized

1. Diverters obtain free water from public watercourses

2. Subsidies from Federal Reclamation Program

D. Minimal Recognition of Indian and Hispanic Water Rights

IV. THE WESTERN RIVER RESTORATION MOVEMENT

A. Origins in the 1970s and 1980s

Westerners, alarmed by the increasing stresses on the rivers, begin to look for ways to broaden and diversify the existing, extraction-dominated water policies

B. Modern River Restoration Initiatives

1. End of the "Big Dam Era"

President Carter's 1977 "Hit List"

Ed Marston, "Ripples Grow When a Dam Dies," High Country News (October 31, 1994) (Commenting on the historical significance of the defeat in 1990 of the proposed Two Forks Dam in Colorado)

2. Flow Regimes of Dams

"Water Budget" to protect Columbia River salmon

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4. Endangered Species Protection

Michael C. Blumm & Greg D. Corbin, "Salmon and the Endangered Species Act: Lessons from the Columbia Basin," 74 Washington Law Review 519 (1999)

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5. Instream Flows

Lawrence J. MacDonnell, Instream Flow Protection in the West (1989)

Cynthia F. Covell, "A Survey of State Instream Flow Programs in the Western United States," 1 Denver Water Law Review 177 (1998)

6. Protection of Rangeland Riparian Areas

Improved Conservation practices by Ranchers

Expanded Conservation Management by the Forest Service and Bureau of Land Management

7. City and Town River Restoration

Ann L. Riley, Restoring Streams in Cities: A Guide for Planners, Policymakers, and Citizens (1998)

8. Contributions of Indian Tribes

Treaty rights to Protect Fisheries and Rivers

David H. Getches, Charles Wilkinson & Robert A Williams, Jr. Cases and Materials on Federal Indian Law, pp. 894-97 (4th ed. 1998) (Sources on whether Indian treaties include an "environment right" to protection of wildlife habitat)

Tribal Natural Resource Management

Northwest Indian Fisheries Commission, A Comprehensive Tribal Natural resources Management: A Report from the Treaty Indian Tribes in Western Washington, 1997 (1997)

The Indian Voice

9. New Institutions: Watershed Councils

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Erika Trautman & Andy Lenderman, "Cooperating on the Valles Caldera," High Country News (December 3, 2001) (A New Mexico preserve run by nine trustees from diverse backgrounds)

10. New Institutions: Water Trusts

Janet C. Neuman & Cheyenne Chapman, "Wading into the Water Market: The First Five Years of the Oregon Water Trust," 14 Journal of Environmental Law and Litigation 135 (1999)

11. New Institutions: State Water Reform Organizations

WaterWatch in Oregon and the Center for Environmental Law and policy in Washington
http://www.tu.org/conservation/western_water.asp (Trout Unlimited offices in Montana, Colorado, Wyoming, Utah, and Idaho)

12. Expanded Use of Science

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Sandra Postel & Brian Richter, Rivers for Life: Managing Water for People and Nature (2003)

C. Particular Efforts

1. Mono Lake

John Hart, Storm Over Mono: The Mono Lake Battle and the California Water Future (1996)

2. The Colorado River Delta

Charles Bergman, Red Delta: Fighting for Life at the End of the Colorado River (2002)

3. The Elwha Dams on the Olympic Peninsula

Adam Burke, “River of Dreams: The Thirty-Year Struggle to Resurrect Washington’s Elwha River and Its Spectacular Salmon Runs,” (September 24, 2001)

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IV. CONCLUSION: SEEING THE WHOLE RIVER AND THE WHOLE COMMUNTIY

Natural Resource Policy and Trends: The Coming Challenges

Water Challenges in the Next Decade: Watershed Innovation is the Currency of Change

Laura S. Ziemer
Director, Trout Unlimited's Montana Water Project

The West is in a period of transformation. Population growth, shifts in regional economic drivers, emerging rural-urban tensions, declining agricultural revenues, and a period of persistent drought combine to underscore the need for change in our way of approaching water management.

For almost the past 20 years, the West has been experiencing unprecedented population growth. From 1990 to 1995, ten of the nation's 50 fastest-growing counties were in Colorado. Eight of the ten fastest-growing cities were in the West (data from the period 1990-1994). The *Report of the Western Water Policy Advisory Commission* (June 1998) describes this landscape-scale change as the "West becoming a series of urban archipelagos (e.g., Denver, Salt Lake, Boise, Portland, Phoenix, Albuquerque, Dallas, Houston, and Seattle) arrayed across a mostly arid landscape."

Competition for water is not just coming from population growth. A prolonged drought cycle west-wide has increased water scarcity for irrigated agriculture, and has highlighted the losses to aquatic ecosystems. Not only has the cycle of drought brought attention to the plight of imperiled species that depend on water in western rivers and streams, but much of the western population growth is increasingly dependent upon "quality of life" and recreation-driven local and regional economies. The decline in aquatic ecosystem health has a direct tie to these emerging western economic drivers.

Almost 30 percent of all fishes of North America are considered endangered, threatened, of special concern, or already extinct. More than 20 native western fishes have become extinct in the past century; 100 more are considered threatened, endangered or of special concern. Loss of all these species would mean the destruction of 70 percent of all fish species native to the waters west of the Rocky Mountains. Not surprisingly, the greatest numbers of candidate species for listing under the Endangered Species Act are aquatic species.

The link between western aquatic decline and water consumption is the human overhaul of the West's rivers and streams. It is one of the most profound ecosystem alterations this country has known. Nine of the ten largest dams in the United States lie in the West; the West produces 70% of the country's hydropower; and, holds two-thirds of the nation's reservoir capacity. In the West, 50 of the 68 fish species listed under the Endangered Species Act got there through water diversions, dams, reservoirs, channeling, and other watershed disturbances. Nationally, animals that live in freshwater, wetland, or riparian habitats during at least part of their life-cycle are about twice as likely to be at risk of extinction as those in other environments. (Heinz Center, *The State of the*

Nation's Ecosystems: Measuring the Lands, Waters, and Living Resources of the United States (2002)).

Adding to the pressure on western streamflows is increased groundwater pumping. Fueling rural and semi-rural (some would say, "sprawling") population growth and increasingly being relied upon to either enlarge or supplement existing agricultural irrigation, groundwater pumping is one of the emerging threats to sustainable water supplies. Water tables that are dropping, depleted stream and river flows, and in states like Montana, the lack of a coherent groundwater regulatory policy are all indicators that the connection between groundwater and surface water supplies will be one of the most challenging aspects of water management in the next decade.

The sum of these trends leaves no doubt about one thing: to face the challenges of the next decade in water allocation will mean to do things differently than we are doing them now. To use a time-worn phrase, change is the only certainty. This presentation will ask the question where--west-wide and state-wide--are we seeing innovation? What are the factors that create positive change? The thesis of my presentation is that innovation in western water is *not* coming from the Bureau of Reclamation, not coming from lawsuits under the Endangered Species Act, not coming from embattled state governments; but rather, innovation is coming from water users and watershed groups. I will review a number of watershed-based initiatives across Montana and the West that have begun to provide some solutions to water allocation problems, and that provide models of change that also create hope that solutions that meet all needs can be found.

The Western Way of Water:
Using the West's Most Precious Resource

"When the well is dry, we learn the worth of water."

- Ben Franklin, Poor Richard's Almanac 1733

> *This is the first of a series of reports on western water issues that the Western Water Alliance will release during the summer of 2003. It focuses on a basic question – how the West uses its water. Reports on the issues, problems and solutions will follow.*

In the West, water is life. Water taken from rivers and underground aquifers allowed the West's farms, fields and livestock to flourish, and our mighty cities to grow. Water allowed to flow in those rivers provides aesthetic and spiritual solace, endless recreation, and a home for many of the West's original inhabitants -- fish, insects, plants and animals. If there is even a tiny creek in the West's drier towns, the city park sits squarely astride that trickle.

Surprisingly, given the vehemence of western opinions about water, few people in the West know how we use our most precious resource. Even among the policy makers and "water wonks", there is a lack of fundamental information about water supply and use. Fewer still have any idea how water use in our region compares to other parts of the continental United States. In Congressional hearings this year about a proposal for a federal water study, basic facts about how water is used were the source of much discussion, simply because witnesses and Members of Congress did not have the facts at hand.

The West now faces a host of serious issues involving water – issues that range from population growth, sprawl, the changing western economy, drought, climate and public health. While the following is by no means an exhaustive list, at the top of the West's water issues are the following:

- Managing the water demands for the West's rapidly growing population centers;
- Cleaning up, or better yet preventing, non-point source pollution that results from return flows and runoff;
- Protecting aquatic species and habitats at risk of extinction from water and other development;
- Resolving and honoring Native American tribal and treaty water rights claims.
- Restoring adequate water to rivers for recreational, aesthetic and aquatic ecosystem use;
- Providing safe drinking water to rural communities; and
- Supporting productive agricultural communities.

That set of issues can be summed up in one phrase: "creating an equitable and sustainable water future for the West." Alternatively, it can be subdivided into an endless set of problems and concerns. The bad news is: the list is long; the problems are complex; and the solutions sometimes are expensive. The good news is that the solutions are feasible. In most cases, the solutions require us to do a better job of managing the water supplies we already have – using water efficiently, reducing pollution added to water to let the next user have better water to start with, and shifting water to meet new demands, while respecting the value of existing uses.

In years of normal precipitation, water supplies in most of the West are already more than fully used. We get by because the West's major lakes and reservoirs help store some water from year-to-year, allowing wet years to help meet the needs of normal and dry years.

A sustained, severe and multi-year drought now grips the West. Major reservoirs such as the Colorado's Lake Mead and Lake Powell are at their lowest point in decades – halfempty pools surrounded by deep white bathtub rings. Two states, Utah and Arizona, have already declared drought disaster emergencies this year, more may follow. Most of the major cities have instituted some form of water restrictions, from voluntary to mandatory limits. Farms and ranches are in trouble, with many failing. With river flow depleted due to the drought and falling reservoir levels, and then the remaining water sucked out for use by agriculture, cities and other users, environmental water uses lose. The fish, wildlife, wetlands, aquatic life, even the increasingly important economic recreation, typically have the lowest, if any, place in the priority queue.

Looking ahead, climate change will certainly change the patterns of precipitation – more here, less there, less snow, more rain. Consequent change in the way water is used is inevitable.

This drought is a glimpse of the West's future – if we do not change the way we use and value water. It is a wake up call about the limits of the Western way of water use. It is also provides examples, for better and worse, of approaches that could be taken by the rest of the country, as water issues become more pressing elsewhere.

This first report, *The Western Way of Water: Using the West's Most Precious Resource,* provides basic facts about western water use, and informs both the national and regional discussion about our most precious resource.

How is Water Used in the West?

There are two different ways of figuring water use, and to understand western water issues, both are important.

Water withdrawal is the most intuitive approach – how much water is diverted from rivers and reservoirs as well as pumped from groundwater aquifers.

Consumptive use of water is the other, more complicated way. It is a measurement of the water used up – the water evaporated into the sky, incorporated into plants or otherwise unavailable for reuse.

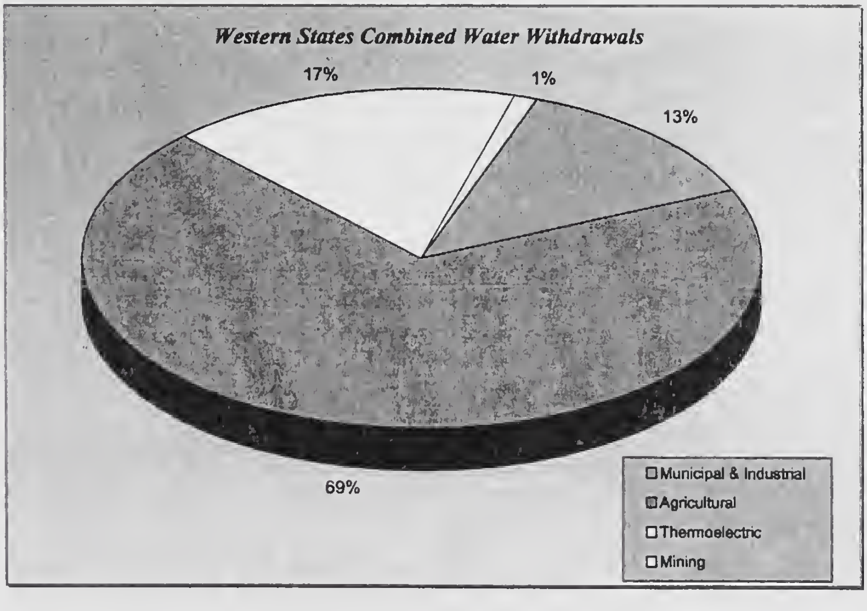
For instance, when a city resident takes a shower, runs the dishwasher, or flushes the toilet, that water had to be withdrawn from a water source. However, after use, most returns to the sewer system, where it is treated and is available for reuse. Usually, this is by discharging it to the local river, where the next town downstream can use it.

However, if the water is instead used to irrigate a farm or water suburban grass, much of the water is taken up by the plants and evaporated or transpired to the atmosphere – that water is consumptively used and lost to the system. A significant proportion of water withdrawn for agricultural use is returned to the system through leaky canals, or application of more water than the plants can use. Those conveyance losses and return flows recharge groundwater or flow back into streams where others can use the water. Lawn watering is usually mostly consumptive use, with little return flow.

If water were used only once, withdrawals would be the appropriate measure of use. However, for most purposes, a substantial amount of water withdrawn is returned and can be used again, sometimes after treatment to remove pollution, sometimes directly; therefore, consumptive use is often the appropriate measure. Withdrawal, no matter the return flow, has does have consequences. Drawing water from a river may leave too little for fish or aquatic life, no matter where the return flow. Water returned is usually changed in quality, temperature or timing, which has profound effects on aquatic life and subsequent uses. Both measures are important.

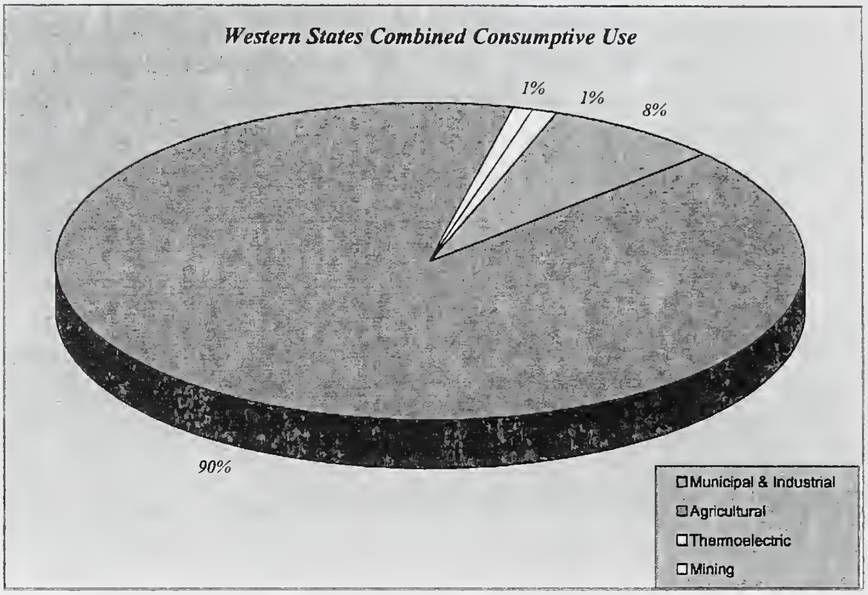
Water Withdrawals

For the 17 western states, agriculture (which for this report includes both farm irrigation and livestock), is by far the largest user of water drawn from rivers and groundwater aquifers in each state and for the West as a whole. It is followed by cooling water for fossil fuel and nuclear power plants, with water supplied for municipal and industrial uses (including domestic, municipal, commercial and industrial) trailing.



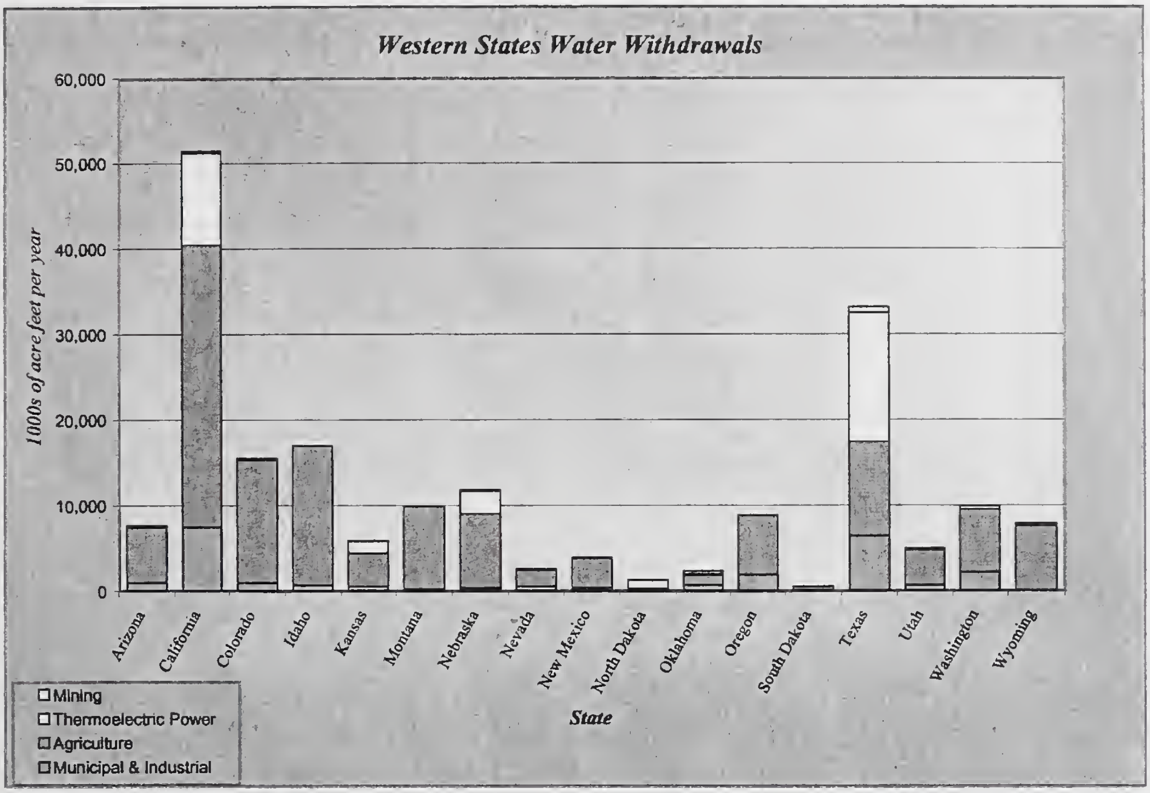
Consumptive Use

Taking consumptive use as the measure, agriculture uses an even greater proportion of the water– 90% of the consumptive western use vs. 69% of the withdrawn water. Even this figure is somewhat understated, because much of the municipal and industrial consumptive use is for landscaping, especially lawns. In many cities, a significant proportion of water use as a whole, and the majority of consumptive use, goes to watering the grass.



Western State Water Use

While each western state has its own pattern, agricultural water use, whether measured by withdrawal or consumption, dominates in every state. Summary graphs for water withdrawals and consumptive use follow. Appendix 2 presents tabular data. The Appendix 3 presents state-by-state details.


Western States Water Withdrawals
60,000
50,000
40,000
30,000
20,000
10,000
0
1000s of acre feet per year
Arizona
California
Colorado
Idaho
Kansas
Montana
Nebraska
Nevada
New Mexico
North Dakota
Oklahoma
Oregon
South Dakota
Texas
Utah
Washington
Wyoming
State
☐ Mining
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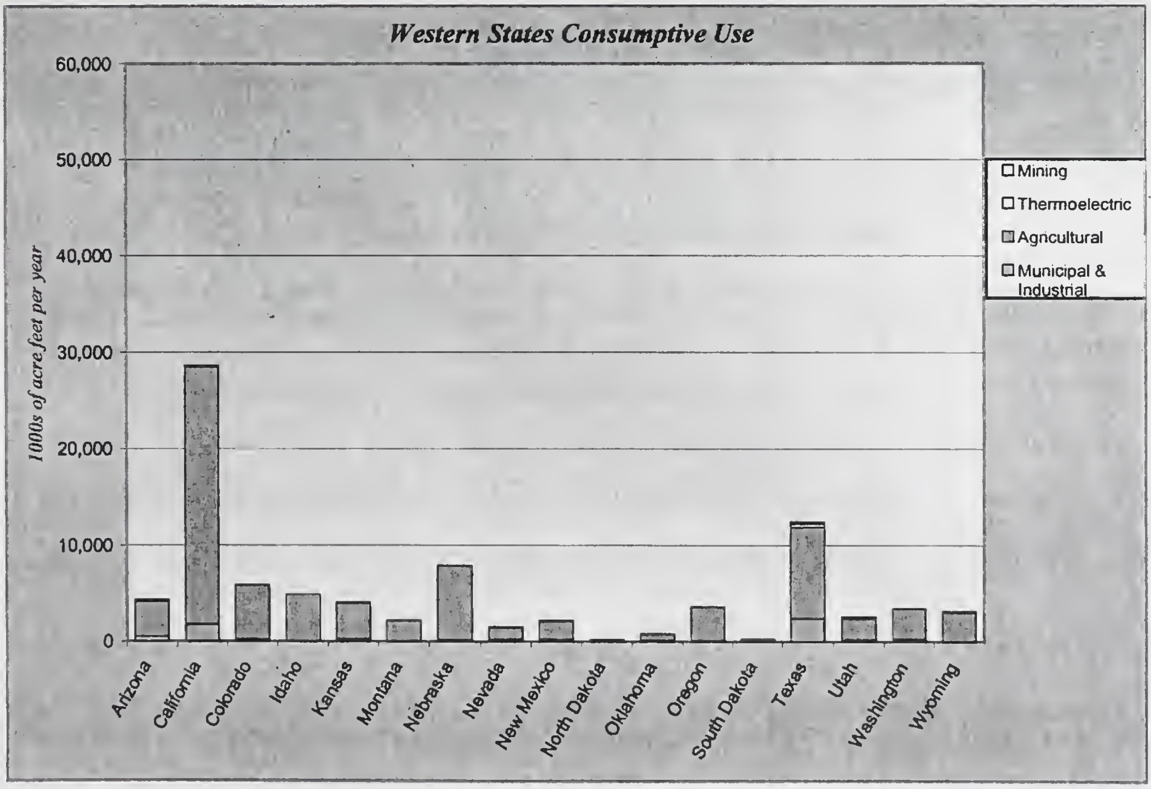
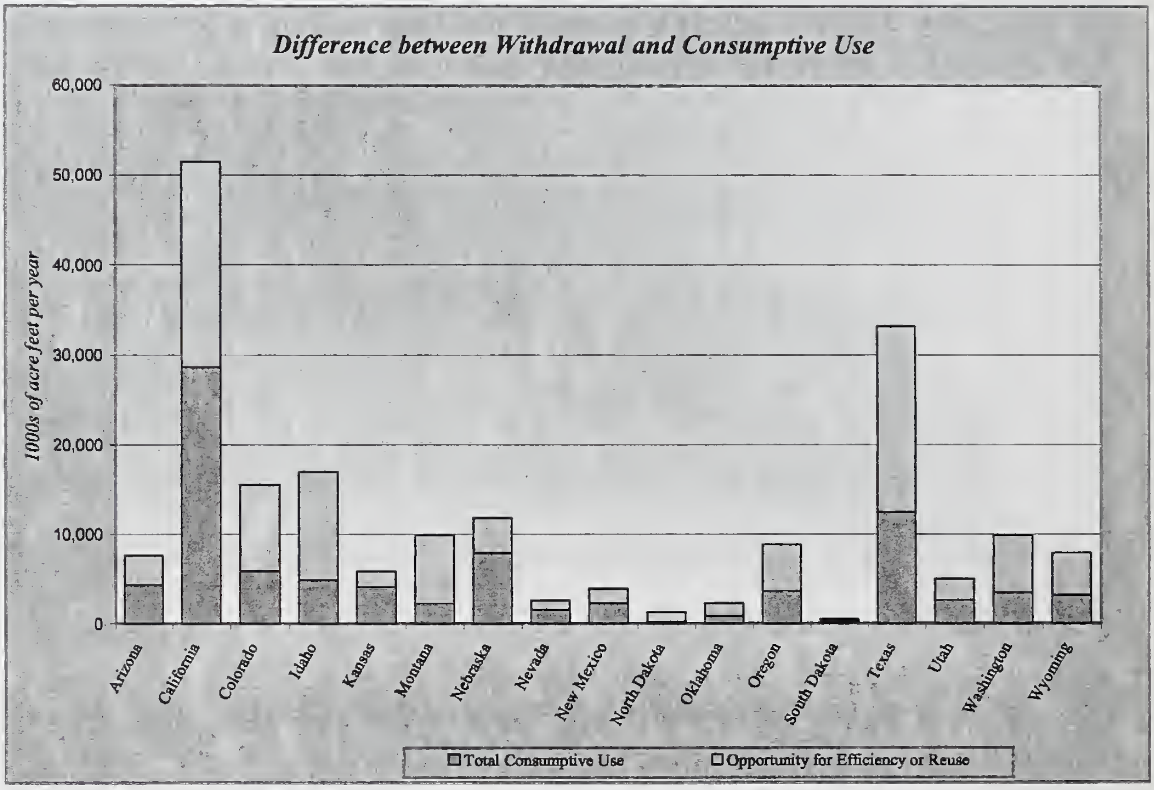
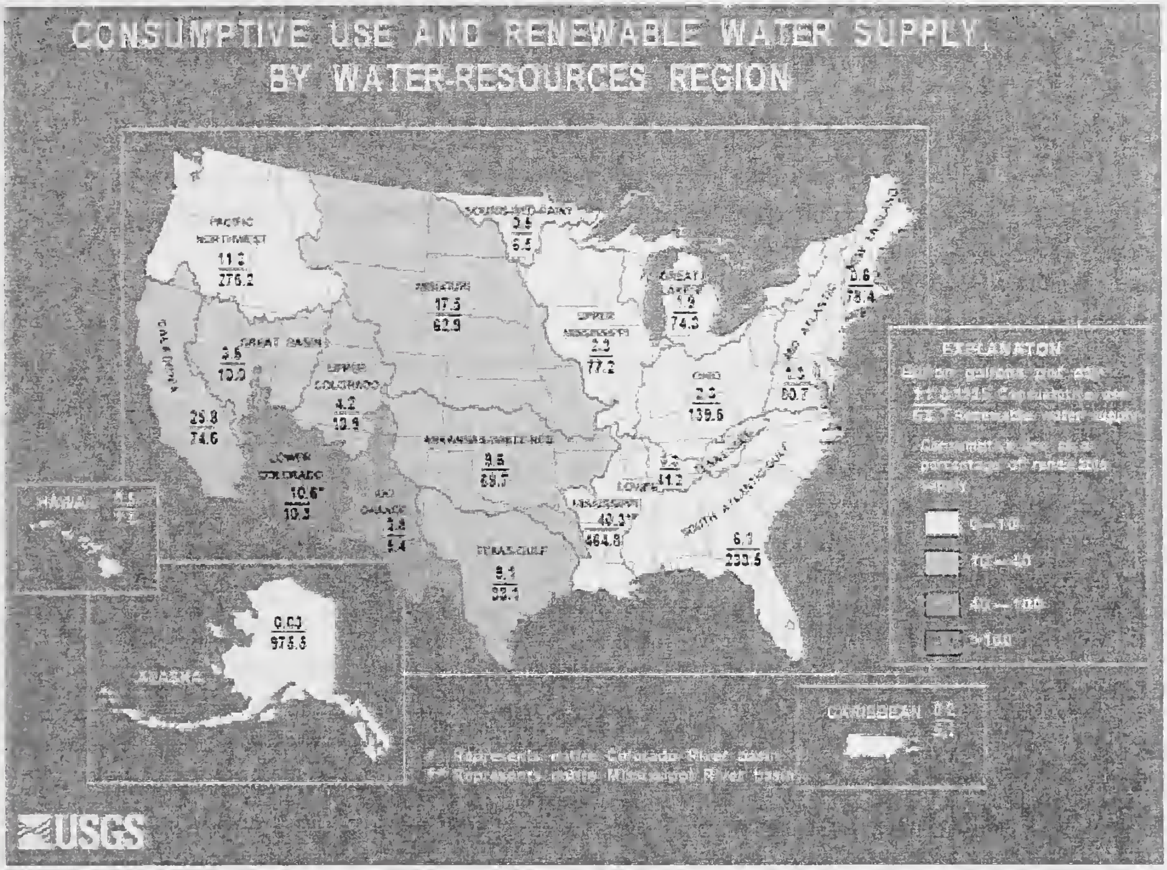

Western States Consumptive Use
60,000
50,000
40,000
30,000
20,000
10,000
0
1000s of acre feet per year
Arizona
California
Colorado
Idaho
Kansas
Montana
Nebraska
Nevada
New Mexico
North Dakota
Oklahoma
Oregon
South Dakota
Texas
Utah
Washington
Wyoming
☐ Mining
☐ Thermoelectric
☐ Agricultural
☐ Municipal & Industrial

To highlight the relationship between consumptive use and withdrawals, as well as to indicate that improved efficiency may provide a solution to some of the West's water issues, the differences between the two measures are shown below.



How Does Water Use Compare to Water Supply?

The essential question for water is whether the supply can meet the demand. The chart below provides a national overview of the difference between renewable water supply and water use. A water budget for each western state is presented in Appendix 3.



Source: http://water.usgs.gov/watuse/misc/consuse-renewable.html To convert to the units used in this report, thousands of acre-feet per year, multiply billions of gallons per day by 1120.

Conclusion

The information presented in this report provides only the broadest overview of the issues of supply and demand for western water. This report is offered to make only a few points.

- Western states have already developed large water supplies and put that water to use.
- There is a huge difference between water withdrawn from rivers and aquifers for use and consumptive use. Efficiency and reuse of that differential represents a large potential source for meeting new water needs.
- Agriculture by any measure, withdrawal or even more strikingly consumptive use, is by far the dominant use of water in the West.
- Water for municipal and industrial use (excluding thermoelectricity generation) represents a relatively small proportion of western water use. Even with existing patterns of municipal and industrial water use, shifting a

small proportion of agricultural use to municipal and industrial use could supply water for future growth.

This report highlights that the difficult questions are those of management – how will the West use the water already developed. Future reports will focus on that question and the issues of allocation, balancing supply and demand, efficiency, equity, and sustainability.

We are at a crossroads in Western water. Cities will continue to grow. Rivers are running dry. Fish and aquatic species are going extinct. The list of other issues that affect water is growing – suburban sprawl, recreation, forestry, agricultural practices, mining and more. At the same time, people in the West want beautiful spaces, a healthy natural environment, and the rivers full of life. Will we sacrifice the last of the aquatic ecosystems to fuel Western growth? Or will we better manage our water supplies, use water efficiently and cleanly, restore our rivers, and provide water for a robust, equitable economy? The choice is ours.

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Sustaining Agriculture
Jeff Schahczenski
Western Sustainable Working Group

Conservation Security Program Farm Profile
The Natvig Farm, Cresco, Iowa

Mike Natvig and his partner Amy Miller operate a 420-acre certified organic farm in Northeast Iowa. Mike is the fourth generation of his family to farm this land, and he has chosen a production plan that diversifies his output and builds on environmental performance.

The Natvig farm produces cattle, hogs, hay, corn and soybeans, as well as some small grains that are part of a resource-conserving crop rotation. The farm also includes some oak savannah and native prairie restorations and a 25-acre woodland for wildlife habitat.

Operating as a certified-organic farm requires Mike to implement a production plan that incorporates resource-conserving practices throughout the farm. Crop rotations that include hay and small grains, rotational grazing, and nutrient management are at the core of the Natvig production plan.

As a supervisor on the Howard County Soil and Water Conservation District board, Mike is familiar with the type of NRCS conservation practices that work to control erosion in his area. As an organic farmer, Mike is also familiar with conservation practices that protect and build the natural resources on his farm.

Mike looks forward to developing a Conservation Security Plan on his farm. As an organic farmer, Mike cares about all of the resources on his farm and would therefore work towards a Tier III CSP plan.

Current Production

The Mike Natvig Farm is a diversified livestock and row crop farm, producing hogs and beef for niche markets, and row crops and calves for the conventional market. Because this farm is certified-organic, Mr. Natvig keeps detailed records of his production inputs and incorporates conservation planning on the entire operation.

The Natvig farm produces 450 to 500 hogs a year that are pasture raised. These hogs are direct marketed to niche markets and consumers. The livestock operation also includes a herd of about 50 beef cows, from which about 10 steers a year are marketed directly to consumers. The remaining calves are sold on the open market or kept as replacements. Like the hogs, the cattle are raised on pasture.

The Natvig crop program incorporates a long-term, resource-conserving crop rotation on 180 acres. This crop rotation includes corn, soybeans, hay, small grains and green manure cover crops. The rotation works as such:

Year 1	Corn

Year 2	Soybeans
Year 3	Oats/Rye or other small grains with field peas, followed by a fall cover crop tilled under in the spring for a green manure crop
Year 4	Soybeans
Year 5	Oats or other small grain with new hay seeding
Year 6	Hay
Year 7	Hay

This crop rotation provides the Natvig operation with a diversity of feed for the livestock, cash crops for market, and conservation practices that build soil tilth and prevent disease and erosion inherent in a mono-cropping system.

A substantial part of the Natvig farm is in pasture. Cattle and hogs rotationally graze the Natvig pastures and this practice helps with control of invasive species. Pasture mowing also helps to control noxious weeds.

The Natvig farm also includes about 20 acres of native prairie planting and 10 acres of oak savannah that is rotationally grazed.

Mike is also conducting on farm organic research through the Michael Fields Institute.

Developing a Conservation Security Plan

The Natvig farm is actively implementing conservation practices that complement the organic production. Mike and Amy are interested in addressing all of the resources of concern on their operation, which would qualify them for a Tier III plan. **Current practices may require modification to meet NRCS standards.**

Resources of concern for this operation are:

- Soil conservation
- Water quality protection
- Pasture management
- Native prairie and oak savannah management
- Wildlife habitat.

Conservation practices (Current in black, future CSP practices underlined):

1. Soil conservation is one of the primary resources of concern in this agricultural area of Northeast Iowa. To address soil conservation, the Natvig farm has incorporated and would enroll in a Conservation Security Plan the following practices:

- Contour planting
- Terraces
- Grass waterways
- Crop rotations
- Enrollment in a CSP Tier III plan could also allow for the construction of some new erosion control structures to retain runoff and encourage wildlife habitat
- No till cultivation

2. Water quality protection is achieved on this farm through a diversity of practices that support an organic production plan. These practices include:

- Nutrient management: A composting practice could be developed according to NRCS practice standards
- Rotational grazing
- Crop rotations
- Organic production methods for nutrients and pests

3. Pasture management is a critical part of an organic livestock operation. The Natvig farm utilizes the following practices:

- Rotational grazing
- Invasive species management through intensive grazing and mowing
- A Tier III contract could allow conversion of some tillable land to permanent pasture
- Inter-seeding of native species into pasture

4. Native prairie and oak savannah restorations are occurring on this farm and could be enhanced through a CSP contract. The oak savannah remnants are rotationally grazed. A CSP contract would allow for:

- Reseeding native species for enhanced prairie restoration
- Provide maintenance payments for mowing and burning

5. Wildlife habitat is found in the Natvig native prairie and oak savannah environments, as well as in the 25-acre woodland. A CSP plan could provide further enhancements:

- Field borders and buffers required for organic certification could be enhanced through native prairie species and tree plantings
- The farm's incidental woodland could be fenced from grazing and improved to encourage desired tree species
- Construction of new ponds for erosion control would also provide habitat for wildlife

Conservation Security Program payment assumptions

The NRCS has not yet released the draft rules for CSP. However, it is possible to broadly estimate CSP payments using established regional land value rental rates for crop and pasture lands.

Also, the Sustainable Agriculture Coalition is proposing to the NRCS an enhanced payment schedule that could provide some possible numbers for the purpose of estimating the value of a Tier III contract on the Natvig farm.

The following payment schedule is an estimate only, and should not be considered to be the actual payments under a CSP Tier III schedule.

1. Base Payment at the Tier III level based on an average land value formula:

Cropland	200 acres @ $16.42	$3,284
Pasture	150 acres @ 7.72	1,158
Total Base payment		$4,442

2. Cost share and maintenance determined on type and scope of practices implemented in the CSP contract. Estimate $3,000 annual payment for study purposes.

3. Enhanced payments based on values proposed by Sustainable Ag Coalition:

Factor IA.—Resource conserving crop rotations; rotational grazing; other resource protection practices that contribute to substantial environmental performance	$6,000
Factor IB.—Substantially exceeds minimum quality criteria for each resource of concern	
Factor II—Includes approved additional Resource of Concern beyond required one, identified on farm	$3,000
Factor III—Includes approved on-farm research and demonstration project; or approved with field days	$3,000
Factor IV—Participates in watershed or regional plan with 75% of farms in CSP enrollment: one time payment	$2,500/$3,000 w/field days
	$2,000 one time payment
Potential range of enhanced payments:	$6,000 to $15,000

Estimated CSP contract annual payment:

Base rental payment:	$ 4,442
Cost Share estimate**	3,000
Enhanced payment, Factor IA	6,000
Factor IB***	3,000
Subtotal	$16,442
Additional factors:	
Factor II	3,000
Factor III	3,000
Potential total	$22,442

Notes:
**Cost share shown is an "out of the hat" estimated number.
*** Assume certified organic practices allow for exceeding minimum quality criteria.

The Environmental Quality Incentive Program
Conservation Plans for Working Lands*

The Farm Security and Rural Investment Act of 2002 became law in May of 2002. This farm policy will shape American agriculture for the next six years. The **Environmental Quality Incentive Program or EQIP** has been substantially expanded and rule changes provide new opportunities of sustainable farmers and ranchers.

ELIGIBILITY

Agricultural Producers engaged in livestock or crop production. Tribal producers are fully eligible. Eligible lands include cropland, rangeland, pasture, and private non-industrial forestland. Limited resource and beginning farmers and ranchers are eligible for enhanced payments (up to 90% cost share). A beginning farmer or rancher is an individual or entity that has operated a farm or ranch for not more than ten years. Limited resource producers are producers with total operator household income under $20,000, total farm assets under $150,000 and gross sales under $100,000.

EQIP CONTRACTS

All EQIP activities must be carried out according to an EQIP plan of operations that include the practice(s) to be implemented during the life of the contract which can be up to a maximum of 10 years. Applications are accepted throughout the year and each application is through a state and locally developed evaluation process. Through EQIP, producers may receive up to 75 percent of the cost of structural conservation practices. They also may receive incentive payments for land management conservation practices important to improving and maintaining the health of resources in the area. Limited resource producers and beginning farmers and ranchers are eligible for up to 90 percent cost-sharing.

Total cost-share and incentive payments are limited to $450,000 per individual over the period of the 2002 farm bill, regardless of the number of farms or contracts. Starting in fiscal year 2003 (October 2002), no individual or entity may receive EQIP payments in any crop year in which the individual or entity's average adjusted gross income for the preceding three years exceeds $2.5 million, unless 75 percent of that income is from farming, ranching or forestry interests.

NEW CHANGES TO THE PROGRAM

- **There are no conservation priority areas in the new EQIP. This means that all producers are eligible regardless of where you are located. There is no longer** any requirement to maximize environmental benefits per dollar spent and there is no longer any competitive advantage to being funded by accepting a lower cost-share rate. Your chances for receiving funding are now based almost entirely on whether the conservation practice(s) proposed are a high priority in your area and that they seek to optimize environmental benefits as determined by your NRCS State Conservationist with advice from the State Technical Advisory Committee. At least 60 percent of the funds for the EQIP will be targeted to livestock production practices, including grazing. In addition to these program changes to new initiatives will be created and funded under the EQIP: Conservation Innovation grants and Ground and Surface Water Conservation and up to 5% of EQIP funding for a special Conservation Partnerships and Cooperation initiative.

CONSERVATION INNOVATION GRANTS

A new competitive grant program that can be used to leverage federal investment, stimulate innovative approaches, and accelerate technology transfer. The grants cannot exceed 50 percent of the cost of the project. Details are expected in 2003.

GROUND AND SURFACE WATER CONSERVATION

Additional EQIP funding specifically to promote ground and surface water conservation activities to improve irrigation systems; convert to the production of less water intensive agricultural crops; improve water storage through water banking and ground water recharge.

- CONSERVATION PARTNERSHIPS AND COOPERATION INITIATIVE

Allows non-profits, state and local governments to purpose cooperative and innovative special projects with funding coming from up to 5 percent of EQIP (and other Conservation programs). These will allow several groups
to work together on a project that concerns solutions to high priority resources of concern. Details coming.

ADDITIONAL NOTES:

1. Be aware that obtaining EQIP funding requires that you examine carefully the criteria that will be used for ranking proposals. The ranking criteria are being rewritten in several states so be sure to obtain the most recent copy of them before putting your application together.

2. Your State Conservationist (the head of state NRCS offices) along with the State Technical Committee have a great deal of influence over the details of the rules for this program in your state. You can attend these meetings or ask to serve on these committees, particularly if you are a member of an organization that is supposed to be represented on this committee.

3. Because of the new Farm Bill the detailed rules for these new programs are not yet known in detail. They are expected within the next few months and pay attention to details as they are announced.

4. Two states, Minnesota and Iowa are likely to allow EQIP funding to be used to assist farmers and ranchers to transition to organic production. Montana may offer this opportunity in 2003. If you are interested in making such a transition, check with your state NRCS office and ask if they are going to make a similar effort like Minnesota, Iowa and Montana to provide funding for such efforts.

NRCS CONTACTS IN WESTERN STATES:

Arizona- 602-280-8801
Colorado-720-544-2810
Idaho-208-378-5700
Nevada-775-784-5863
New Mexico-1-800-410-2067
Montana- 406-587-6795
Oregon-503-414-3200
Utah-801-524-4565
Washington-509-323-2971
Wyoming-307-261-6457

National Office- Mark Berkland, 202-720-1845, mark.berkland@usda.com

By Internet:

<www.nrcs.usda.gov/contact/

The Conservation Security Program

Conservation Plans for Working Lands*

The Farm Security and Rural Investment Act of 2002 became law in May of 2002. This farm policy will shape American agriculture for the next six years. The largest new program in the farm bill is the **Conservation Security Program**, an innovative conservation program that will provide farmers and ranchers with annual payments for implementing conservation plans on their working lands, beginning in 2003.

ELIGIBILITY

Any agricultural producer—an owner, operator, landlord, tenant, or sharecropper who shares in the risk of producing any crop or livestock—is entitled to develop a **conservation security plan.** The plan must meet the approval of the Natural Resources Conservation Service (NRCS) and must contain:

1) Identification of designated resources and land to be conserved
2) A description of selected tier level and practices to be implemented for resource conservation
3) A schedule for conservation plan implementation

CONSERVATION SECURITY CONTRACTS

Once the conservation security plan is approved, the farmer will enter into a contract with the NRCS. In each of the three tier levels of contracts, NRCS will determine minimum requirements and required practices. All practices must meet NRCS standards.

Tier 1 Contract:

- Maximum annual payment of $20,000
- Partial farm enrollment
- 5 year contract, renewable for 5 to 10 years with upgrade
- Must address at least one significant resource of concern for the enrolled portion of land

Tier 2 Contract:

- Maximum annual payment of $35,000
- Whole farm enrollment
- 5 to 10 year contract, renewable for up to 10 years
- Must address at least one significant resource of concern for entire operation

Tier 3 Contract:

- Maximum annual payment of $45,000
- Whole farm enrollment
- 5 to 10 year contract, renewable for up to 10 years
- Must apply a resource management system that addresses all resources of concern for entire operation

PAYMENT CRITERIA

Annual payments are determined by the total of the following three amounts:

1) **Base Payment** uses the 2001average national per-acre rental rate for a specified land use.
    - **Tier 1**: 5 percent of rental rate. Total base payment may not exceed 25 percent of the tier limit or $5,000
    - **Tier 2**: 10 percent of rental rate. Total base payment may not exceed 30 percent of tier limit or $10,500
    - **Tier 3**: 15 percent of rental rate. Total base payment may not exceed 30 percent of tier limit or $13,500

2) **Cost Share for Practices** uses the average county costs of practices for the 2001 crop year. Payment covers up to 75 percent of the total practice cost, or 90 percent for beginning farmers and ranchers. In addition to new practices, costs of maintenance of existing practices are covered. Practices include:
    - Land management and vegetative practices
    - Land-based structural practices

3) **Enhanced Payments** will be made for a plan that:
    - Includes multiple conservation practices that exceed minimum tier requirements
    - Addresses local conservation priorities in addition to the required resource of concern for the operation
    - Participates in on-farm research, demonstration, or pilot projects
    - Participates in watershed or regional conservation plan with 75% of producers involved
    - Carries out assessment and evaluation of activities covered in the conservation security plan

Conservation practices that may be implemented under a Conservation Security Contract:

- Nutrient management
- Integrated pest management
- Water conservation and quality management, including irrigation
- Grazing, pasture, and rangeland management
- Soil conservation, quality, and residue management
- Invasive species management
- Fish and wildlife habitat conservation, restoration, and management
- Air quality management
- Energy conservation measures
- Biological resource conservation and regeneration
- Contour farming
- Strip cropping
- Cover cropping
- Controlled rotational grazing
- Resource-conserving crop rotation
- Conversion of portions of cropland from soil depleting to soil conserving use
- Partial field conservation practices
- Native grassland and prairie protection and restoration
- Other practices approved by USDA

ELIGIBLE LAND

Private agricultural land is eligible, including cropland, grassland, prairie, improved pastureland, rangeland, and forested land that is part of a farm.

EXCLUDED PRACTICES

No payments will be made for animal waste storage or treatment facilities.

RESOURCES OF CONCERN

Each state NRCS office will identify state and local resources of concern. Every conservation security plan must address at least one resource of concern, and Tier 3 plans must address all that are applicable to their operation. The resource of concern must be addressed to a level that meets appropriate non-degradation standards -- meaning that the combination of practices in the plan must solve the problem so that resources are sustained.

Note: Additional requirements are specified in the law, and rules now under development will contain further details. Contact your NRCS office for more information or Western SAWG, wsawg@ncat.org, 406-494-8636.

ORGANIC PRODUCTION

There have been several requests that the rules for this new program make provisions for organic producers that will:

- enable organic certification plans to be used as the basis for certified CSP plans
- automatically provide for the consideration of organic producers for Tier III payments
- provide support for those who are transitioning to organic production
- give priority to organic certifiers be a selected as third-party technical assistance providers to help farmers and ranchers carry out the adoption of conservation practices.

Water Quality Directions: Back to Basics and New Concepts

Julie A. DalSoglio
Deputy Director, Montana Office
U.S. Environmental Protection Agency

More than 30 years since the enactment of the Clean Water Act, the U.S. has made significant progress in addressing water pollution problems. Local, Tribal, State, Federal, public and private partners have successfully controlled the most serious sources of pollution from municipal sewage treatment plants and industry. Despite these successes, many challenges remain. States have identified miles of rivers and streams and acres of lakes not meeting designated water quality uses or established water quality standards. Non-regulated forms of pollution, mainly from various land use practices, are the identified sources. Nationally our water programs are at a historic turning point.

A future direction for the water programs is being outlined. This direction includes a reorientation towards a watershed approach; re-focus on water quality monitoring and assessments; better use of water quality restoration planning and implementation programs; and development of innovative tools to achieve water quality improvements. Embedded in the vision is a recognition that future achievements must rely on the historic and expanding partnerships found at the watershed scale.

Concluding Session

Bringing it Home: Meeting Future Challenges with the Watershed Approach

- Water Quality
- Water Quantity
- Sustaining Agriculture
- Growth and Development

Synthesis and Looking Toward the Future

Bringing it Home:
Meeting Future Challenges with the Watershed Approach

Format and Questions:

The morning session was designed to give four perspectives and an overview of the major challenges facing the interior west in the areas of water quantity, water quality, sustaining agriculture, and growth and development. The afternoon sessions bring that discussion from the broad to specific. Each session presents two local practitioner views on the challenge highlighted. Facilitated discussion follows so that participants have the opportunity to discuss the same two questions that panelists answered and serves as an opportunity to shape responses to the challenges on a local, state, and regional level.

- Four Concurrent, non-repeating topic sessions. (Go to one)
- Topic Session Titles:
    - Water Quality
    - Water Quantity
    - Growth and Development
    - Sustaining Agriculture

- Each Topic Session will begin with two panelists answering the following two questions.
    1. **Introduce yourself and describe your experience with issue *X* in your watershed.**
    2. **What is your relationship to a community- based, watershed approach to solving natural resource problems?**
- Opening dialogue by panelist will serve to
    1. Opening and setting the stage
    2. Stimulate dialog
    3. Introduce the "local approach to a critical local issue -- i.e. water quality
    4. Show who watershed incorporated single-issue concerns into overall community plans -- part of the whole.

- Topic Sessions will then break into small group discussion sessions.

Using small groups and group members as reporters and facilitators they will answer the following questions

1. Introduce yourself and briefly define your relationship or role to a community-based, watershed and what resource issues are being addressed? (Not Recorded)
2. What do we need to make community based planning effective in the future? (Recorded)

- Small discussion groups will report back to their larger Topic Session audience.

- Each Topic Session moderator will synthesize the discussion group reports and lead discussion of their Topic Session audience.

- Topic Session moderators will assist the Wrap-up Speaker report back at the "Symposium Wrap Up." Final session.

Session summaries may also become a reporting of benefits, successes, failures and resource needs – policy funds tech assistance etc. – for area based governance, planning and implementation.

Water Quantity

Because of the central fact of aridity in the Interior West, the allocation and use of water is one of the central concerns of every economic and community endeavor, and laws, infrastructure, land and water use, climate, and collaboration play central roles in how we think about water.

Water Quality

Legacies of antiquated land use and water management regimes, changing scientific understanding of water quality, changes in the legal landscape, and new and changing pressures on the resource have increased attention and tension surrounding the quality of the waters of the Interior West and the implications it has for community and watershed based approaches to maintaining, improving, and management healthy waters and the human and natural communities they support.

Lewis and Clark Water Quality Protection District

James Wilbur

"What is your relationship to a community - based or watershed approach to solving natural resource or other community concerns? "

My role as the Watershed & Community Outreach Coordinator for the **Lewis & Clark County Water Quality Protection District** (WQPD) involves dealing with natural resource and community issues on a regular basis. The Lewis & Clark County Commission under authority from Montana state statutes created the WQPD in 1992 for the stated purpose "to protect, preserve, and improve the quality of surface water and ground water." The boundaries of the WQPD were drawn to essentially encompass the parts of the Prickly Pear Creek/Lake Helena watershed that is located within Lewis & Clark County including the Cities of Helena and East Helena and the entire sub-watersheds of Tenmile, Sevenmile, and Silver Creeks. Local water quality districts are fee-based. The WQPD assess annual fees for each developed lot in the County of $5.50 and in the Cities at $4.50 with large industrial, agricultural, and commercial water users assessed fees that are set proportional to their water use. Revenues from fees in fiscal year 2002 were approximately $142,000. These fees fund a staff of 2.32 full time employees or FTEs and provide project funding that is often utilized as matching funds in order to obtain a variety of grants to implement the programs and projects of the WQPD.

The WQPD Board of Directors is made up of representatives of: the Lewis & Clark City-County Board of Health, Lewis & Clark Conservation District, the Lewis & Clark Board of County Commissioners, the East Helena City Council, the Helena City Commission, the Helena Citizen's Council, and three representatives of the general public.

The WQPD has established a mission statement and goals for the program: ***To preserve, protect and improve water quality within District boundaries.***

GOALS:

1.0 ***Characterize the nature and extent of District water resources.***
Characterize the quality and quantity of surface water and groundwater in the District, and maintain a current inventory of potential sources of degradation to water in the District.

2.0 ***Respond to citizens concerns about water quality problems.***
Answer citizen questions and concerns regarding water quality complaints and problems within the District. Investigate complaints, when appropriate, and coordinate with Local, State and Federal regulatory agencies regarding enforcement.

3.0 ***Educate the public about local water issues.***
Provide education regarding the source and distribution of our water supplies, the potential threats to the quality and quantity of our drinking water, and pollution prevention methods. Increase awareness of water quality issues through public education.

4.0 ***Facilitate planning for the prudent use of our municipal watersheds.***
Planning efforts will include coordination with watershed users to develop sound watershed management recommendations.

5.0 ***Develop and implement water quality protection projects.***
Develop and implement protection and pollution prevention projects to protect and preserve District water sources at their current high quality levels. Seek outside funds to conduct water quality protection projects for high priority threats to District water sources. Assist in the development of project scope and budget and provide administrative assistance for water quality protection programs. Provide technical and financial assistance if resources are available.

WQPD Projects and Activities

WATERSHED/SURFACE WATER PROJECTS & ACTIVITIES:

The Tenmile Creek watershed has been the focus of WQPD's watershed planning efforts since 1992. The Upper Tenmile Creek watershed provides the City of Helena with approximately 70% of its annual drinking water supply from a water collection and treatment system operated by the City of Helena Public Works Department. Tenmile Creek and its tributaries provides aquatic habitat for wildlife and vegetation, recharge to the Helena Valley aquifer, and water for irrigation and agricultural uses.

Upper Tenmile Creek Watershed Planning. The Upper Tenmile Watershed Steering Group formed in March 1996, as a collaborative, consensus-based organization. Membership of the group consists of watershed residents and property owners, businesses, local, state, and federal government agencies. The WQPD represents Lewis and Clark County as a participating member of the watershed group; District staff attends regular meetings.

The WQPD has also administering grants for revegetation projects on Upper Tenmile Creek. Projects for water quality sampling and streamflow gaging on both Upper and Lower Tenmile Creek and selected tributaries were funded for two years by an EPA 104(b)(3) grant. Matching funds and in-kind efforts were provided by the U.S. Geological Survey, watershed residents, and the WQPD and with field work in 1997 and 1998 and reports published by USGS in 2000 and 2001 .

Abandoned Mine Cleanup/EPA National Priorities Listing. Based in part on a WQPD request, the EPA began road construction and removal actions at several abandoned mine sites in the Tenmile watershed during the summer of 1999. The WQPD submitted a letter to Montana DEQ and EPA supporting use of the Luttrell Pit in the Basin Creek Mine Complex as the best option for a local repository for cleanup of abandoned mine wastes in both the Tenmile and Basin Creek watersheds. Subsequent to support from EPA, USFS, DEQ, and Lewis & Clark and Jefferson Counties, the Luttrell Pit was designed and constructed to contain the abandoned mine wastes.

> The WQPD also submitted a letter to Governor Racicot and DEQ supporting EPA National Priorities Listing for abandoned mine cleanup of the Tenmile and Basin Creek watersheds. The Upper Tenmile Mining District was listed on October 21, 1999. The Upper Tenmile Mining District Record of Decision was approved on June 30, 2002. The ROD calls for mine waste and tailings removal, mine site cleanups, yard soil cleanups in the Landmark Subdivision and the town site of Rimini, construction of a new water and wastewater community system for Rimini, and modification of the City of Helena's Chessman Reservoir and watershed management to provide additional clean water to upper Tenmile Creek in the summer months to improve water quality in the stream.

Lower Tenmile Creek Watershed Planning In 2001 the WQPD received a Clean Water Act Section 319 Grant of $87,044 for watershed activities within the Lower Tenmile Creek Watershed. The WQPD also conducted an all day Know-Your-Watershed workshop for Tenmile Creek with approximately 50 participants. The WQPD continues in the organization and provides coordination services for the Lower Tenmile Watershed Group (LTWG) with over 270 on the group's mailing list with participants attending monthly meetings and educational presentations on watershed issues and projects.

Recent project work in the Lower Tenmile watershed includes:

- Conducting stream flow and water quality monitoring of four sites on Lower Tenmile Creek and Sevenmile Creek in collaboration with the USGS (two-year effort),
- Installation of a wire gage at the Williams Street Bridge location on Tenmile Creek with ongoing stream stage measurements and maintenance of a stage/discharge table for the site,
- Conducting a Seepage Study of Lower Tenmile Creek with the USGS and MT Department of Fish Wildlife & Parks with approximately twenty monitoring locations,
- Conducting a Riparian Planting program including a volunteer day,
- Starting a city Storm Drain Stenciling program
- Constructing three stream improvement demonstration projects

    - A riparian fencing project.
    - A remote watering station installation for grazing.
    - A stream bank stabilization project using tree revetments and revegetation.
- Contracting for a stream reach assessment and design of larger scale stream improvement project.

The WQPD and LTWG are pursuing grants and additional funding to implement a noxious weed program, construct the designed major stream improvement project, and potential wetlands preservation and reconstruction projects.

Prickly Pear Creek & Lake Helena Watershed Planning.

Prickly Pear Creek and the Lake Helena watershed extends beyond Lewis & Clark County into Jefferson County. Because of this jurisdictional barrier the WQPD has limited its activities with this watershed in the past to assisting and cooperating with the Lewis & Clark Conservation District and the Jefferson Valley Conservation District in their watershed organizing efforts.

Prickly Pear Stream Monitoring: Nine high school and middle school teachers representing four area schools adopted sites along the Prickly Pear Creek. Each spring and fall students and teachers conducted a series of biological, chemical and physical tests at their adopted site with their students. Monitors use the data sheets and monitoring protocols established by the Montana Volunteer Water Monitoring Program (Montana Watercourse at MSU). The date from these monitoring events is entered into a database at the District. The outreach coordinator provided six hours continuing education training for the volunteer teachers during February and March 2000. Training topics were monitoring the stream's physical characteristics and the chemical properties of water. The outreach coordinator also wrote and distributed five newsletters to the volunteers during the year The WQPD has partnered with Montana Fish, Wildlife and Parks and Montana Watercourse at MSU for this project.

Lake Helena Watershed Project. In 2003 the WQPD received a Clean Water Act Section 319 Grant of $40,075 for watershed activities within the Lake Helena Watershed including Prickly Pear Creek in Jefferson County. This grant funding will allow the WQPD in conjunction with the Montana Watercourse to hold a Know Your Watershed Workshop for the Prickly Pear Creek watershed in 2004 and work toward organizing a Prickly Pear watershed group. The grant also provides for WQPD to continue to provide coordination service for the LTWG and a Prickly Pear group. Additional grant funding is being pursued by WQPD to provide project funding for both watersheds.

Stormwater Assessment Project. The WQPD was a successful recipient of an EPA and State of Montana Non-Point Source Pollution project grant for $30,000 in 1995. The project was funded to collect information to support development of a "Total Maximum Daily Load" model for stormwater runoff from the City of Helena's west side, and to evaluate the effectiveness of stormwater treatment by local area wetlands. The project study site is located at the wetlands and on Spring Creek, a tributary of Tenmile Creek near the Lewis and Clark County Fairgrounds on Custer Avenue in Helena.

The last sampling event occurred June 25th, 1999; samples were collected from the selected sites and submitted to DPHHS laboratory for analysis. Staff gauge readings and monitoring well water levels were recorded as well. A final report, with recommendations for follow-up work, was submitted to DEQ and EPA in October 1999.

Wetlands Community Partnership. The WQPD received grant funding in July 1998, from DEQ Wetlands Conservation Program to complete an inventory of wetland resources in the Helena area. The grant also provides funding for community education and outreach on the importance of wetlands within our community. The WQPD's role is to administer grant funds and coordinate the work and educational efforts of the Wetlands Community Partnership. The Partnership is comprised of Montana and Last Chance Audubon, Pam Hackley, formerly of OEA Research, Inc., the Montana Wetlands Trust, the Lewis and Clark County Planning Department and WQPD.

As part of the project, the WQPD contracted with the U.S. Fish and Wildlife Service to complete the National Wetlands Inventory (NWI) for the Helena area. After an initial review of the NWI maps, the WQPD contracted with a Montana flight service to fly-over the project area and take color infrared aerial photographs at a 1:10,000 scale to provide maps with greater detail for purposes of the project.

At the request of the WQPD, Lewis & Clark County GIS program manager assisted the project partners in importing the new wetlands map information into the County GIS system. Selected areas were ground-truthed during the 1999 field season, using a field form developed by the Wetlands partnership. Audubon developed a plant identification brochure and hosted a workshop to train volunteers. A presentation entitled "Wetlands 101" was developed and given to numerous community groups. In addition, the WQPD has become a participating member of the Montana Wetlands Council.

A second grant proposal, Phase II, which built on the work of the first, was submitted to DEQ and in August 2001 and the WQPD received $21,975 in funding. The purpose of the second project was to prioritize wetlands identified in Phase I for protection and/or restoration. Education was a substantial component of Phase II, and was directed to local planners, decision makers, and landowners. Phase II was completed and a report[i] issued in June 2002.

City of Helena Stormwater Master Planning. The WQPD has assisted the City of Helena Public Works Department and HDR Engineering, Inc. in developing the City of Helena Stormwater Master Plan and applying for a Phase 2 Stormwater NPDES permit from DEQ. The WQPD has an MOU with the City of Helena to take the lead responsibility for the public education and outreach component of this program.

ENVIRONMENTAL EDUCATION:

The WQPD has supported a health educator at a various levels since 1998. The health educator's primary responsibilities included administering and implementing the "Water Watchers" elementary education programs and the Prickly Pear Creek monitoring program.

Water Watchers Program for County 4th and 5th Graders. "Water Watchers" consists of two sequential units. Fourth graders complete Level I in the spring. The following fall, when the same students are fifth graders, they complete Level II. Thus, the students study water quality twice in a six-month period -- during the important years when environmental and stewardship values are being formulated. Both programs consist of classroom activities that are implemented by the classroom teacher; a classroom visit and field trip which are presented by the WQPD health educator; and follow-up, action-oriented activities that are completed by the teacher after the field trip. Approximately 650 children complete the program every year.

Education Through Print Media. In partnership with the City of Helena, the WQPD developed and published ads in the local newspaper on water conservation in 2001. The District also placed ads in the local newspaper asking citizens who were experiencing dry wells to contact us. Over the years the WQPD writes a "Liquid Assets" column that is published in the *Helena Independent Record*; topics included the Source Water Protection program, xeriscaping, chemical free lawn and garden care, the WQPD wetlands and TMDL study, well care and maintenance, water conservation, and the bedrock aquifer study.

Brochures and Flyers. The WQPD developed a "Well Maintenance and Your Health" brochure which is being distributed by the County Permit & Planning Division to everyone who receives a permit to install a septic system. A flyer entitled "Automotive Wastes: Here's What to do With Them" was created and is being distributed by the WQPD, the County Environment Health Division, and the City of Helena Recycling coordinator. A flyer describing the WQPD and current projects was included in 9,500 City of Helena water bills in August 2000. A brochure entitled "Wetlands in the Helena Valley" was produced and distributed by the Wetlands Community Partnership. A USGS fact sheet entitled "Tenmile Creek, Montana: Watershed of Many Uses" was developed in cooperation with the WQPD and the Montana Department of Natural Resources and Conservation.

Native Plant Demonstration Garden. An public educational project, which was implemented at the City-County Health Department Clinic, 1930 9th Avenue. Existing lawn was removed from the north and west sides of the building and replaced with creeping juniper, potentilla, aspen and sheep fescue. Gravel was used as a ground cover between shrubs.

The garden demonstrates that attractive landscaping can reduce watering requirements and result in less water pollution due to runoff of excess fertilizer and pesticides. Healthy residential lawns require frequent application of both fertilizers and pesticides, while native plants are more resident to disease and hardier for Montana's soils. During droughts, such as the one currently being experienced, lower watering requirements can help to conserve water.

WQPD GROUND WATER PROJECTS & ACTIVITIES:

Bedrock Aquifer Study. The WQPD, in cooperation with the USGS, was the recipient of a DNRC Renewable Resource grant to complete a water quality and quantity assessment of the bedrock aquifer systems that recharge the Helena Valley aquifer.

Fluoride map. At the request of a local doctor, public water supply records were accessed and compiled as the basis for development of a map showing fluoride concentration isopleths in groundwater in the Helena Valley. The map is available on the County web site.

Montana Bureau of Mines and Geology Quarterly Groundwater Well Monitoring Program. The Montana Bureau of Mines and Geology (MBMG) contracts with the WQPD to take quarterly measurements of 34 wells located in Lewis and Clark County and provide subsequent reports to the MBMG for inclusion in the statewide database.

Monthly Water Quality and Static Water Level Monitoring. In addition to MBMG wells, 16 wells are sampled and water levels are measured. The information collected will be used to evaluate water quality impacts resulting from subdivision. Initial information collected indicates water quality varies seasonally and in relation to well depths. Further, seasonal variation can be significant and in some cases, has exceeded EPA drinking water limits (10 mg/L nitrate as nitrogen) in some areas, including the North Hills area. Additional wells will be added and sampling will be continued, and data will be shared with interested parties including county departments, DEQ, and the MBMG GWIC program.

Helena Area Groundwater Monitoring Well Network. In 1999, the WQPD received a Renewable Resource Grant from the Department of Natural Resources and Conservation (DNRC) that provided $100,000 toward the installation of a network of twenty-seven dedicated ground water monitoring wells. Installation of the wells in cooperation with the MBMG was completed in 2002. The wells will provide the means by which District staff can collect monthly static water level and periodic ground water quality information for distribution to county agencies, decision makers, the public, and state and federal agencies.

Helena's Westside Sampling Program. The WQPD participated in sampling domestic wells on Helena's Westside and the Williams Street area to assess the quality of ground water. The project was part of a feasibility study on providing extensions of the City of Helena municipal water and wastewater services for areas of the county and adjacent to the City of Helena. . Sampling was conducted in cooperation with Anderson-Montgomery Consulting **Engineers.**

Nitrate Study: As a follow-up to the 1990 and 1994 nitrate studies conducted by the WQPD, nitrate samples were collected in September 2000, from 20 previously monitored wells. Trends in nitrate concentrations will be determined by comparing the data to previous sampling results. A report was be distributed to the Board of County Commissioners, City-County Planning Board, City-County Board of Health, and the cities of Helena and East Helena.

Dry Well Inventory. Numerous reports of dry wells and reduced water availability in the Helena area have been documented as part of an on-going inventory. Reports are verified with well owners or well drillers. Continuing drought has probably contributed to the number of reported dry wells (60).

Subdivision Comment and Review. The creation of subdivisions in Lewis and Clark County has become a topic of contention and debate, particularly as they involve water availability and water quality. Drought conditions of the last five years have exacerbated the situation. At the request of the county planning office, the WQPD prepares and submits comments about water quality and water availability in proposed subdivisions in the county.

Public Water Supply Inspections. WQPD staff performed sanitary surveys of public water supplies in the Helena area, including follow-up of boil orders.

Helena Valley Source Water Assessments. The WQPD contracted with the DEQ Source Water Program to develop the source water assessment for the public water supplies in the Helena area. This project was completed in 2003 in collaboration with the Environmental Studies program of the University of Montana-Helena.

North Hills Controlled Groundwater Area Petition. Due to concerns that groundwater resources were over allocated and increasing subdivisions were negatively impacting water quality a group of concerned citizens of the North Hills area of the Helena Valley submitted a petition in July 2001, to the DNRC requesting that a 52.5 square mile area be designated a Controlled Groundwater Area and that a study be conducted to evaluate water availability and water quality.

In response to the citizen request, DNRC initiated an environmental assessment of the North Hills, held public meetings and accepted comment from interested parties. After reviewing the submitted information, DNRC issued an order on October 11, 2002, instituting a temporary controlled groundwater area for the 52.5 square mile area. The North Hills citizen's group then approached the WQPD Board of Directors with a request that the WQPD sponsor a Renewable Resources grant application to help fund a study of water availability and quality in the area of concern.

A grant application was submitted to the DNRC by the WQPD in cooperation with the MBMG. The goal of the grant is to collect geologic and hydrologic data and present interpretations for use in evaluating groundwater management. Data will be used to construct a water budget. The grant proposal was approved for partial funding by the 2003 State Legislature. Grant funding will become available in fiscal year 2005.

Geology Field Trip – Helena Valley. On July 24, 2001, the WQPD sponsored a geology field trip of the North Hills in the Helena Valley. Mitchell W. Reynolds, PG, of the USGS provided discussion of the bedrock geology of the North Hills as it relates to water availability. Attendees included county commissioners, county planning board members, water quality district board members, DEQ employees and interested members of the public.

Summary: The above activities list are indicative of the efforts an organization devoted to issues regarding water in a geographic area can accomplish. The WQPD Board revised their goals and objectives statements in 2002 as follows:

1. Advocate. We are advocates for water quality in all we do.
2. Data Collection. We are a key source of impartial water quality data.
3. Educate. We are public educators.
4. Cooperate and Coordinate. We achieve the mission of the Water Quality Protection District by participating with other agencies and groups to make the best use of resources in all we do.

These statements effectively covers the WQPD's role and approach to solving natural resource or other community concerns.

Sustaining Agriculture

In the majority of the rural West, and even in many areas experiencing rapid development, agriculture has a major role to play in the economics, community, and landscape. How can we support a sustainable agriculture sector that continues to contribute to the economic, social, and natural fabric of watersheds?

The Milesnick Ranch

Livestock management and world-class flyfishing streams work hand-in-hand at the Milesnich Ranch in Montana.

The Milesnicks incorporated a time-controleed grazing system to leave adequate feed and cover for waterfowl nesting, upland game birds, and deer and elk habitat.

They created backwater areas to enhance riparian vegetation, providng more waterfowl nesting habitat. They improved the fishery by developing pools and riffles in spring creeks, managing for woody vegetation on streambanks, and ensuring shading of streams. They stabilized streambanks by establishing graveled access points and crossings, fanced water gaps for livestock watering, a muskrat control program, and riprap on the larger streams.

By maintaining vegetative cover of field perimetes and ensuring a diverse plant community, they have improved the habitat for pheasants, Hungarian partridge, safe hens, blue grouse, and wild turkeys—all of which make their home on the ranch.

Developing springs into reliable water sources has proven beneficial to big game as a well as livestock.

From *Water Quality: A "Win-Win" in the West.* MSU Extension. For more information visit www.homepage.montana.edu/~stream

Growth and Development

Major population growth and change strains many areas as communities try to grapple with rapid shifts in demographics, infrastructure demands, and natural resource impacts. Other areas are faced with maintaining vibrant economic sectors, natural resource allocations, and communities while the population ages and shrinks.

Looking Toward the Future

Mary Ellen Wolfe
Community Mediation Center

This session will synthesize the gamut of watershed wisdom shared during the two-day conference. Highlights, trends, common themes and divergent messages will be appraised. Cast in a prospective light, Ms. Wolfe will then summarize the lessons, implications and inspiration to be had for the future of watershed landscapes and communities.

Further Resources

List of Participants

Further Information
for the Watershed
Approach

2003 WATERSHED SYMPOSIUM PARTICIPANTS

LAST NAME	FIRST NAME	ADDRESS	CITY, STATE ZIP	PHONE	E:MAIL	ORGANIZATION
Abbenhaus	T.J.	P.O. Box 201800	Helena, MT 59620-1800	444-0534	tjabbenhaus@state.mt.us	Montana State Lib/NRIS
Aber	Jesse	P.O Box 201601	Helena, MT 59620-1601	444-6628	jaber@state.mt.us	DNRC Water Management
Adams	Barry	PO Box 2029	Browning, MT 59417	338-7421	Badams@BlackfeetNation.Com	Blackfeet Environmental Office
Adamson	**Lane**	**P.O. Box 330**	**Ennis, MT 59729**	**682-3259**	mvranch@3rivers.net	**Madison Valley Ranchlands Group**
Aderhold	Mike	4600 Giant Springs Road	Great Falls, MT 59406	454-5846	maderhold@state.mt.us	MT Fish, Wildlife and Parks
Alger	**Jess**	**PO Box 27**	**Stanford, MT 59479**	**(406) 566-2483**		
Allen	**Frank**	**PO Box 1996**	**Missoula, MT 59806**	**406-273-4626**	**frank@ijnr.org**	**Institutes for Journalism & natural Resources**
Alston	**Marc**	**999 18th St.**	**Denver, CO 80202**	**(303) 312-6897**	**alston.marc@epa.gov**	**US EPA**
Amman	David	PO Box 201601	Helena, MT 59620		damman@state.mt.us	Dept. of Natural Resources
Anderson	Rick	P.O. Box 309	Fort Benton, MT 59520	622-5627 x101	chcd@mt.nacdnet.org	Choteau County Conservation Dist.
Anderson	Robert	P.O. Box 201800	Poplar, MT 59255	783-5335	srranch@nemontel.net	
Archie	Anne	P.O. Box 537	Kila, MT 59920	257-0732	pilgrim2@centurytel.net	
Azevedo	Paul	P.O. Box 201601	Helena, MT 59620-1601	444-6635	pazavedo@state.mt.us	DNRC Water Management
Bernd-Cohen	**Tina**	**P.O. Box 563**	**Helena, MT 50624**	**442-4002**	blkfootchallenge@aol.com	**Blackfoot Challenge**
Beck	Ray	PO Box 201601	Helena, MT 59620	444-2074	rbeck@state.mt.us	DNRC Conservation and Resouce Development
Beyer	Dennis	P.O. Box 36	Gering, NE 69341	(308)436-7111	dbeyer@npnrd.org	Nine Mile Creek Watershed Assoc.
Blackgoat	Renita	PO Box 2029	Browning, MT 59417	338-7421	Rblackgoat@BlackfeetNation.Com	Blackfeet Environmental Office
Blatter	Kay M	Rt. 1, Box 105	Chinook, MT 59523	357-2931		Milk River Internation Alliance
Bohmker	Bill	P.O. Box 154	Fort Shaw, MT 59443	264-5751		Sun River
Bone (+8)	Allen	2600 Grand Avenue	Butte, MT 59701	533-2600	bonea@butte.k12.mt.us	East Middle School
Boucher	Molly	101 Huffine - MSU	Bozeman, MT 59717	994-6690	mboucher@montana.edu	Montana Water Center
Boyd	**Karin**	**211 N, Grand, Suite C**	**Bozeman, MT 59715**	**587-6352**	**kboyd@imt.net**	**Applied Geomorphology Inc,**
Boyer	**Jennifer**	**10281 Kelly Canyon Rd.**	**Bozeman, MT 59715**	**406-994-0251**	**jendwyer@montana.net**	**Big Hole Watershed Committee**
Boyle	Jan	2100 16th Ave. South	Great Falls, MT 59405	771-4433	boylej@msun.edu	MT Environmental Training Center
Bray	Rob	PO Box 517	Culbertson, MT 59218	787-5232	robert.bray@mt.usda.gov	NRCS
Brick	Cliff	P.O. Box 7593	Missoula, MT 59807	542-0539	heidi@clarkforg.org	Clark Fork Coalition
Brindley	Hugh	16 E. Main	Winnett, MT 59087-0118	429-6646	shauna.clark@mt.usda.gov	Flatwillow/Box Elder Watershed Group
Brkich	Greg	PO Box 1077	Davidson, Saskatshewan, Canada		gbrkich@sasktel.net	Member of Legislative Assembly
Brown	Scott	P.O. Box 909	Conrad, MT 59425	278-3071	msca@3rivers.net	MT Salinity Control Assoc.
Bushnell	Bob	P.O. Box 392	Lincoln, MT 59639	362-4629	bbob@linctel.net	Lewis & Clark Conservation District
CalfLooking	Lee	PO Box 2029	Browning, MT 59417	338-7421	Lcalflooking@BlackfeetNation.com	Blackfeet Environmental Office
Carlson	Sarah	501 North Sanders	Helena, MT 59601	443-5711	mail@macdnet.org	Montana Association of Conservation Districts
Carstarphen	Camela	1300 W. Park St	Butte, MT 59701	496-4633	ccarstarphen@mtech.edu	MT Bureau of Mines and Geology
Chadwick	Amy	410 Wisconsin	Whitefish, MT 59937	862-3565	amy@watershedconsulting.com	Watershed Consulting, LLC
Chase	John	4436 3rd Ave. N	Great Falls, MT	453-5097		Cascade County Cons. District
Church	Bob	P.O. Box 200201	Helena, MT 59620-0201	444-3271	bchurch@state.mt.us	MT Dept. of Agriculture
Clark	Dan	P.O. Box 130	Choteau, MT 59422	466-2491	tetonag@3rivers.net	Teton County Extension
Clark	Mike	1429 S Grand	Bozeman, MT 59715	581-5748		Trout Unlimited
Clark	Shauna	16 E. Main	Winnett, MT 59087-0118	429-6646	shauna.clark@mt.usda.gov	Flatwillow/Box Elder Watershed Group
Clifford	Matt	P.O. Box 7593	Missoula, MT 59807	542-0539	heidi@clarkforg.org	Clark Fork Coalition
Cohn	Teresa	201 Culbertson Hall, MSU	Bozeman, MT 59717	994-1757	tcohn@montana.edu	Native Waters
Colenso	**Kate**	**1417 Stoddard, Apt 2**	**Missoula, MT 59802**	**829-1284**	**lizzesnc@excite.com**	**Watershed Grad Student, UM**
Compton	Scott	151 Evergreen Dr. Ste. C	Bozeman, MT 59715	586-3136	scompton@state.mt.us	Montana DNRC
Crane	**Jeff**	**2917 L 50 Lane**	**Hotchkiss, CO 81419**	**790-872-2435**	**Cranhckl@rmi.net**	**North Fork River Improvement Association**
Crone	**Tammy**	**311 W. Main, Rm 311**	**Bozeman, MT 59715**	**582-3145**	**tcrone@co.gallatin.mt.us**	**Gallatin Watershed**
Crouch	Wade	1807 3rd St. NW	Great Falls, MT 59405	454-6980	wcrouch@montana.edu	MSU Extension
Crowley	F. Patrick	1930 9th Ave.	Helena, MT 59601	444-5294	pcrowley@state.mt.us	Lewis and Clark Water Quality Protection
Dalby	Chuck	P.O. Box 201601	Helena, MT 59620-1601	444-6644	dalby@state.mt.us	DNRC Water Management
DalSolgio	**Julie**	**10 West 15th Street, Suite 3200**	**Helena, MT 59626**	**406-457-2690**	**dalsoglio.julie@epa.gov**	**US EPA**
Danielson	Stan	1371 Rimtop Drive	Billings, MT 59106	247-4414	sdanielsen@state.mt.us	Yellowstone Cons. Dist. Countil
Davenport	Dave	P.O. Box 1200	Forsyth, MT 59327	346-7494		Rosebud Conservation District
de Arment	Heidi	P.O. Box 7593	Missoula, MT 59807	542-0539	heidi@clarkfork.org	Clark Fork Coalition
Drummond	Victoria	311 W. Main, Rm 208	Bozeman, MT 59715	582-3130	vdrummond@co.gallatin.mt.us	Gallatin County Planning
Dunn	Jeff	P.O. Box 1122	Bozeman, MT 59771	586-1411	jeff.dunn@landandwater.net	Land and Water Consulting

Dworak	Linda	P.O. Box 1663	Hamilton, MT 59840	363-3489	ldinmt@in-tch.com	Bitter Root Valley Wetlands
Eagleman	Jay	RR 1 Box 800	Box Elder, MT 59521	395-4225	jay@cct.rockyboy.org	Chippewa Ck Tribal Water Res. Dept
Easton	Gay	1371 Rimtop Drive	Billings, MT 59105	247-4420	livie@state.mt.us	Yellowstone Cons. Dist. Countil
Ekarins	**Carol**	**P.O. Box 490**	**Hartsel, CO 80449**	**719-672-3005**		**Coaltion of the Upper So. Platte**
English	Alan	311 W. Main, Rm 311	Bozeman, MT 59715	582-3148	aenglish@co.gallatin.mt.us	Gallatin Watershed
Esplin	Brent	PO Box 30137	Billings, MT 59107	247-7338	besplin@gp.usbr.gov	Bureau of Reclamation
Everaert	Ed	P.O. Box 157	Fairfield, MT 59436	467-2533		Greenfields Irrigation District
Fassnacht	Deb	The Swift Bldg. 315 S. 4th East. Ste. 203	Missoula, MT 59801	541-9287	deb@montanawatershed.org	Watershed Education Network
Ferguson	John	218 South 6th St. E	Missoula, MT 59801	721-0476	john.ferguson@montanawatertrust.org	Montana Water Trust
Filipovich	Karen	201 Culbertson Hall, MSU	Bozeman, MT 59717	994-1910	kfilipovich@montana.edu	Montana Watercourse
Flanagan	**Darris**	**c/o 10281 Kelly Canyon Road**	**Bozeman, MT 59715**	**994-0251**		**Big Hole Watershed Committee**
Flynn	Sarah	20 Greenbrier Drive	Missoula, MT 59802	549-5237	psflynn74@earthlink.net	Geum Environmental Consulting
Fox	Stephanie	P.O. Box 288	Hysham, MT 59038	342-5466 x102	stephanie.fox@mt.usda.gov	Treasure County Conservation Dist.
Fox	Richard	633 Remington	Fort Collins, CO 80524	(970)484-3678	twp@treeswaterpeople.org	Trees, Water and People
Franz	Holly	P.O. Box 1715	Helena, MT 59624	442-8560	hjt@gsjw.com	Gough, Shanahan, Johson and Waterman
French	Roxa	120 S. 5th St. Ste. 202	Hamilton, MT 59840	375-2272	brwaterforum@bitteroot.net	Bitterroot Water Forum
Gabel	Roy	1371 Rimtop Drive	Billings, MT 59105	247-4420	livie@state.mt.us	Yellowstone Cons. Dist. Countil
Gagnon	Ken	P.O. Box 669	Chester, MT 59522	759-5778 x102	marlene-moon@mt.nacdnet.org	Liberty County Conservation District
Gilbertson	Jay P.	132B Airport Drive	Brookings, SD 57006	(605)688-6741	edwdd@brookings.net	East Dakota Water Dev. District
Greenup	Taylor	P.O. Box 239	Helena, MT 59624	495-1377	taylor.greenup@landandwater.net	Land and Water Consulting
Guenther	Lyn	P.O. Box 517	Culbertson, MT 59218	787-5232 x101	lyn.guenther@mt.usda.gov	LoMo CRM
Gutkowski	Joe	P.O. Box 8298	Bozeman, MT 59715	587-9181	info@montanariveraction.org	Montana River Action
Haber	Jon	P.O. Box 7669	Missoula, MT 59807	329-3399		USDA - Forest Service
Halfa	Tim	P.O. Box 369	Jordan, MT 59337	557-2740 x100	hatlaran@midrivers.com	Garfield County Conservation Dist
Hanser	Marieanne	1371 Rimtop Drive	Billings, MT 59105	247-4420	livie@state.mt.us	Yellowstone Cons. Dist. Countil
Harrison	Shirley	644 4th Ave. W	Kalispell, MT 59901	751-3956	harrisons@sd5.k12.mt.us	Flathead Conservation District
Hawn	**Ted**	**NRCS, 211 McKinley St.**	**Lewistown, MT 59457**	**538-7401x116**	Theodore.hawn@mt.usda.gov	**NRCS**
Hector	Bob	1371 Rimtop Drive	Billings, MT 59105	247-4420	livie@state.mt.us	Yellowstone Cons. Dist. Countil
Hestekin	Bryan	Box 866	White Sulphur Springs, MT 59645	547-3451		
Hewes	Brooke	The Swift Bldg. 315 S. 4th East. Ste. 203	Missoula, MT 59801	541-9287	water@montanawatershed.org	Watershed Education Network
Higgins	**Susan**	**103 Huffman Hall Montana State Univ**	**Bozeman, MT 59715**	**406-994-1772**	**shiggins@montana.edu**	**Montana Water Center**
Higgins'	Lori	1750 Hwy 99	Troy, ID 83871	208-885-9717	hrggins@uidaho.edu	University of Idaho
Higgins	Susan	101 Huffine - MSU	Bozeman, MT 59717	994-1772	shiggins@montana.edu	Montana Water Center
Hinz	Tom	1400 S. 19th	Bozeman, MT 59718	994-7889	thinz@montana.edu	Montana Wetlands Legacy
Hoffman	Laurence	P.O. Box 855	Helena, MT 59624	447-8346	ACXLH@montana.edu	Upper Ten/Lower Ten Mile & Prickly Pear
Holzer	Jane	P.O. Box 909	Conrad, MT 59425	278-3071	msca@3rivers.net	MT Salinity Control Assoc.
Hoover	Ken	P.O. Box 2092	Red Lodge, MT 59068	690-6081	khoover@wehydro.com	Water's Edge Hydrology
Ingman	Gary	P.O. Box 239	Helena, MT 59624	495-1377	gary.ingman@landandwater.net	Land and Water Consulting
Iverson	Richard	PO Box 522	Culbertson, MT 59218	787-5232	richard.iverson@mt.usda.gov	NRCS- Lower Missouri River CRM
Ivie	Laverne	1371 Rimtop Drive	Billings, MT 59105	247-4420	livie@state.mt.us	Yellowstone Cons. Dist. Countil
Jackson	Don	206 N. Grand Ave	Bozeman, MT 59715	587-4475	don@mtcorps.org	Montana Conservation Corps
Jacobs	Mary	311 W. Main, Room 208	Bozeman, MT 59715	582-3130	eaglestardesign@aol.com	Gallatin Co. Planning Board
Johnstone	Alan	50 Indian Creek Road	Wilsal, MT 59086	578-2186	johnstoneranch@mcn.net	Upper Shield Watershed
Jones	Dave	925 7th Ave. South	Great Falls, MT 59405	454-1151	02avalanch@excite.com	Montana Rural Water Systems
Jonkel	Ali Duvall	P.O. Box 10	Greenough, MT 59823	244-5524	hank@forestry.umt.edu	Blackfoot Challenge
Justus	Michael	2277 Hwy 37	Eureka, MT 59917	296-5262	justusllamas@montanasky.net	Lincoln Conservation District
Kascht	Dave	10 E. Babcock St. Rm 443	Bozeman, MT 59715	587-6794	dave.kascht@mt.usda.gov	NRCS
Kellogg	Warren	PO Box 201601	Helena, MT 59620	444-4490	wkellogg@state.mt.us	NRCS
Kemmis	**Daniel**	**Milwaukee Station, 2nd Floor, UM**	**Missoula, MT 59812**	**243-7700**	**rocky@crmw.org**	**Center for the Rocky Mountain West**
Knudsen	Gary E.	HC 72 Box 7285	Malta, MT 59538	654-2899	garyk@ttc-cmc.net	Milk River Internation Alliance
Knudsen	Rhonda	602 6th Ave. N	Wolf Point, MT 59218	653-1752	2kar@nemontel.net	Fort Peck Irrigation Project
Kronebusch	Paul	8206 Old Shelby Road	Conrad, MT 59425	278-3068	bpkronebusch@mcn.net	Pondera County Cons. Dist.
Kurtz	Debbie	211 N. Grand Ave., Suite J	Bozeman, MT 59715	585-5322	debbie@dtmgis.com	DTM Consulting, Inc.
LaFromboise	Loranda	RR 1 Box 800	Box Elder, MT 59521	395-4225	loranda@cct.rockyboy.org	Chippewa Ck Tribal Water Res. Dept
Lageschulte	Dan	16 E. Main	Winnett, MT 59087-0118	429-6646	shauna.clark@mt.usda.gov	FBE Watershed Group
LeBean	**Michelle**	**201 Culbertson Hall, MSU**	**Bozeman, MT 59717**	**994-1684**	**mlebeau@montana.edu**	**Montana Watercourse**
Lee	Marc	13701 Banner Road SE	Olalla, WA 98359	(253)851-3676	smokeym1@earthlink.net	
Lewis	Anne C.	805 W. Sioux Ave	Pierre, SD 57501	(605)224-8295	AnneCLewis@aol.com	South Dakota Lakes & Streams Assoc.

Logan	Corky	3303 N Cable Rd	Anaconda, MT 59711	533-2473	cjlogan@in-tch.com	Big Hole Watershed Committee
Luebeck	Jill	17 Queens Ct	Butte, MT 59701	494-6216	jmluebeck@aol.com	Big Hole Watershed Committee
Lyles	Roy	PO Box 36	Gering, NE 69341	(308) 436-7111	lyles@npnrd.org	North Platte Natural Resources District
Lynne	Vicki	P.O. Box 3838	Butte, MT 59702	494-4572		National Center for Appropriate Technology
Mack	Ty	P.O. Box 217	Ft Washakie, WY 82520	307-332-6464	tyrelmack@hotmail.com	N Arapaho and E Shoshone Tribes
Mack	Sandy	671 Fieldstone Dr	Corvallis, MT 59828	961-4140	smack@aquest-cs.com	AQuest Collaborative Solutions
Mackin	**Carole**	**1520 E. 6th Ave, Box 200901**	**Helena, MT 59620**	**444-7425**	**cmackin@state.mt.us**	**DEQ**
Magee	**Jim**	**730 N. Montana St.**	**Dillion, MT 59725**	**406-683-9310**	**mageeJames@state.mt.us**	**Fish, Wildlife, and Parks**
Marchi	**Peter**	**PO Box 96**	**Martinsdale, MT 59753**			**Musselshell Water Commissioner**
Martin	**Dave**	**PO Box 201601**	**Helena, MT 59620**	**444-4253**	damartin@state.mt.us	**DNRC Conservation and Resouce Development**
Marshall	David	211 N. Grand, Suite J	Bozeman, MT 59715	585-5322	david@dtmgis.com	DTM Consulting, Inc.
Marxer	Dale	654 Milligan Road	Great Falls, MT 59405	866-3259	damarxer@aol.com	Cascade County Cons. District
Mason	Gloria	601 W Main, Ste 14	Cutbank, MT 59427	873-5752 x101	gmason@mt.mres.usda.gov	Glacier County Conservation District
Mattelin	Bozz	Box 601	Culbertson, MT 59218	786-3286	2mattelin@nemontel.net	Missouri River Conservation District
Maxwell	Anita	Bldg T2, Fort Missoula Rd.	Missoula, MT 59804	327-0405		Montana Natural History Ctr/Clark Fork
McCall	Mickey	119 N. Jackson	Plentywood, MT 59254	765-1801 x118	director@plentywood.com	Sheridan County Conservation Dist
McCain	Chi	406 N Main	Conrad, MT 59425	278-7611 x101	chi.mccuin@mt.usda.gove	Dupuyer Creek Watershed
McDonald	Brian	P.O. Box 563	Helena, MT 59624	442-4002	silent_bri@hotmail.com	Blackfoot Challenge
McDowell	**Will**	**4660 Spurgin**	**Missoula, MT 59804**	**327-8443**	willykim@bigsky.net	**Tri-State Water Quality Council**
McFarland	Clint	1371 Rimtop Drive	Missoula, MT 59105	247-4420	livie@state.mt.us	Yellowstone Cons. Dist. Countil
McGowen	Myla	PO Box 1133	Bozeman, MT 57711	585-9500	mmcgowen@conluenceinc.com	Confluence Consulting Inc.
McLane	**Mike**	**P.O. Box 201601**	**Helena, MT 59620-1601**	**444-1806**	**mmclane@state.mt.us**	**DNRC Water Management**
Meek	Joe	P.O. Box 200901	Helena, MT 59620-0901	444-4806	jmeek@state.mt.us	MTDEQ
Merryman	Tonya	12 3rd St. NW, Ste 300	Great Falls, MT 59404	727-3606 x140	tonya.merryman@mt.usda.gov	Cascade County Cons. District
Milesnick	**Tom**	**5805 Dry Creek Road**	**Belgrade, MT 59714**	**406-388-7001**	**info@milsnickrecreation.com**	**Milesnick Recreation Company**
Miller	**Amy**	**5242 Highway 89 South**	**Livingston, MT 59047**	**222-2899 x101**	**amy-miller@mt.nacdnet.org**	**Park Conservation District**
Miller	**Mike**	**548 Elk Creek Road**	**Heron, MT 59**			**Lower Clark Fork Watershed Group**
Milton	Maxwell	111 Allalta Rd.	Helena, 59602	449-2925	maxmilton@mt.net	Lower Tenmile Watershed Group
Milton	**Bill**	**823 Hwy 87 N**	**Roundup, MT 59072**	**406-323-1771**	**bill_milton@hotmail.com**	**MWCC**
Minger	**Terry**	**500 East 8th Ave. Ste 100**	**Denver, CO 80203**	**303-832-6855**		**Center for Resource Management**
Mitchell	Beau	RR 1 Box 800	Box Elder, MT 59521	395-4225	beaucassmitchell@yahoo.com	Chippewa Ck Tribal Water Res. Dept
Moe	**Richard**	**PO Box 238**	**Two Dot, MT 59085**			**Wheatland County Commissioner**
Montagne	Joan	17 Hodgman Canyon	Bozeman, MT 59715	587-2406	montagne@mcn.net	Bozeman Watershed Council
Moon	Marlene	P.O. Box 669	Chester, MT 59522	759-5778 x102	Marlene-moon@mt.nacdnet.org	Marias River Watershed
Morris	Mike	P.O. Box 3838	Butte, MT 59702	494-4572	mikem@ncat.org	National Center for Appropriate Technology
Morrow	Hillary A.	P.O. Box 369	Jordan, MT 59337	557-2740 x100	hilary.morrow@mt.usda.gov	Garfield County Conservation Dist
Morsette	Jim	RR 1 Box 800	Box Elder, MT 59521	395-4225	loranda@cct.rockyboy.org	Chippewa Ck Tribal Water Res. Dept
Moy	Richard	P.O. Box 201601	Helena, MT 59620-1601	444-6633	mroy@state.mt.us	DNRC Water Management
Muhlfeld	**John**	**911 Wisconsin Ave**	**Whitefish, MT 59937**	**406-862-4927**	**jmuhlfeld@riverdesigngroup.net**	**River Design Group Inc.**
Munday	Pat	Tech Comm Dept - MT Tech	Butte, MT 59701	496-4461	pmunday@mtech.edu	Montana Tech
Musgrove	John	810 8th Street	Havre, MT 59501	265-1737	musgrove@hc-line.net	Rep. HD 91
Nansel	Bob	P.O. Box 1200	Forsyth, MT 59327	346-7494		Rosebud Conservation District
Neptun	**Kristi**	**201 Culbertson Hall, MSU**	**Bozeman, MT 59717**	**994-6425**	**kneptun@montana.edu**	**Montana Watercourse**
O'Connell	William	925 7th Ave. South	Great Falls, MT 59405	454-1151		Montana Rural Water Systems
Otterdal	Ramsey	Star Rte Box 22	Conrad, MT 59425	278-3920	orograin@montana.com	Pondera County Cons. Dist.
Old Chief	Bill	PO Box 2029	Browning, MT 59417	338-7421	BOldChief@BlackfeetNation.Com	Blackfeet Environmental Office
Opper	**Richard**	**1015 W Watson St**	**Lewistown, MT 59457**	**538-6822**		**Missouri River Basin Association**
Paddock	Jeff	P.O. Box 200201	Helena, MT 59620-0201	444-5422	jepaddock@state.mt.us	MT Dept. of Agriculture
Parker	Tom	416 S. 4th St.	Hamilton, MT 59840	360-1011	tlsparker@aol.com	Geum Environmental Consulting
Parks	Susan	7 West 6th Ave., Suite 612	Helena, MT 59601	442-5588x231	susan.parks@ttemi.com	Tetra Tech EM Inc.
Parrie	Traute	1801 N. 1st	Hamilton, MT 59833	363-716	tparrie@fs.fed.us	USFS
Parrot	Shirley	15596 Hwy 12 West	Roundup, MT 59072	323-1662	dparrot@midrivers.com	Lower Mussellshell Cons. District
Patten	**Duncan T.**	**8945 Trooper Trail**	**Bozeman, MT 59715**	**582-0594**	dtpatten@montana.edu	**Montana State University**
Pick	**Thomas**	**28 Golden Trout Way**	**Bozeman, MT 59705**	**587-6947**	thomas.pick@mt.usda.gov	**USDA - NRCS**
Pierce	Bonnie	633 Remington	Fort Collins, CO 80524	(970)484-3678	bpierce96@comcast.net	Trees, Water and People
Pratt	David	3120 Valley Drive East	Miles City, MT 59301	232-7905 x119	david.pratt@mt.usda.gov	USDA-NRCS
Ray	Robert	P.O. Box 200901	Helena, MT 59620	444-5319	rray@state.mt.us	DEQ
Richard	Deeda	P.O. Box 201601	Helena, MT 59620-1601	444-6783	drichard@state.mt.us	MT DNRC

Richards	**Duane**	**1270 #2 Hammond Road**	**Hammond, MT 59332**	**775-6480**	twobarr@midrivers.com	Carter County Conservation Dist
Richardson	Gail	5263 Cimmeron Dr.	Bozeman, MT 59715	585-7206	envirogail@aol.com	Gallatin County Planning Board
Rieman	Frances S.	P.O. Box 36800	Billings, MT 59107-6800	896-5031	trieman@blm.gov	USDI- BLM
Rite	Nikki	P.O. Box 64	Winnett, MT 59087	429-6646	nikki.lott@mt.usda.gov	USDA - NRCS
Robertson	Keith	3026 4th Ave. II	Great Falls, MT 59401	454-2424	keith.robertson@mt.usda.gov	USDA - NRCS
Robinson	James	P.O. Box 201601	Helena, MT 59601	444-4247	Jrobinson@state.mt.us	Dept. of Natural Resources
Rogers	**Rox**	**780 Creston Hatchery Road**	**Kalispell, MT 59901**	**758-6880**	rox_rogers@fws.gov	**Tobacco River Watershed**
Rollo	Alan	808 52nd St. S.	Great Falls, MT 59405	727-4437	arollo@mcn.net	Sun R and Teton R Watershed Grps
Rose	James	1300 Westpark St.	Butte, MT 59701	496-4795	jrose@montana.edu	Montana Bureau of Mines & Geology
Rusmore	Barbara	13 South Wilson Ave., Suite 9	Bozeman, MT 59715	582-1838	barbara@icl.org	Institute for Conservation Leadership
Ryan	Tera	P.O. Box 909	Conrad, MT 59425	278-3071	msca@3rivers.net	MT Salinity Control Assoc.
Sachatello-Sawyer	Bonnie	201 Culbertson Hall, MSU	Bozeman, MT 59715	994-3911	bsawyer@montana.edu	Missouri River Basin
Saul	Linda	P.O. Box 200901	Helena, MT 59620	444-6652	lsaul@state.mt.us	MTDEQ
Schadezenski	**Jeff**	**3040 Continental Dr.**	**Butte, MT 59701**	**406-494-8636**		**Western Sustainable Agriculture Working Group**
Schmitz	Denine	106 AJM Johnson Hall - MSU	Bozeman, MT 59717	994-5705	dschmitz@montana.edu	Big Sky Institute
Sesso	**Jon**	**Courthouse Rm 108**	**Butte, MT 59701**	**497-6250**	**planning@co.silver-bow.mt.us**	**Butte Silver-Bow Planning Department**
Shepard	Sara	1125 Oilfield Ave	Shelby, MT 50474	434-5234		Toole County Conservation District
Shields	Ronald	6184 Head Lane	Helena, MT 59602	442-4854	rshields@initco.net	
Staker	Renee	3710 Fallon #B	Bozeman, MT 59718	522-4011	renee.stoker@mt.usda.gov	Gallatin Conservation District
Steinkraus	Robin	P.O. Box 70	Polson, MT 59860	883-1357	lakers@flatheadlakers.org	Flathead Lakers
Stenson	Adele	PO Box 234	Dupuyer, MT 59432	472-3311	stenson@boone-crockett.org	Boone and Crockett Club's Wildlife Cons. Ed Program
Stiff	Richard	3187 Conestoga Way	Billings, MT 59105	477-6215 x159	rstiff@cdkc.edu	Chief Dull Knife College
Stuart	Bo	2880 Skyway Drive	Helena, MT 59602	449-5201 x245	bstuart@fs.fed.us	USDA Forest Service
Stuckey	Jay	561 Prospect Creek Rd	Thmopson Falls, MT 59873	827-3824	stuckey@blackfoot.net	Prospect Ck Watershed Councial
Sturgis	Wendy	10980 Sleeman Creek Rd.	Lolo, MT 59847	273-2446	wendysturgis@montana.com	Middle Clark Fork WS Group
Sullivan	Sean	The Swift Bldg. 315 S. 4th East, Ste. 203	Missoula, MT 59801	541-9287		Watershed Education Network
Teply	Mark	1325 Van Orsdel	Helena, MT 59602	458-0045	mteply@larixsystems.com	Larix Systems, Inc
Thelen	Chris	4699 Chaparrel Way	Bozeman, MT 59715	582-9702	cthelen@avicom.net	Hyalite Environmental
Thompson	James	P.O. Box 303	Fort Peck, MT 59223	367-5125	jimthomp@nemontel.net	Milk River Internation Alliance
Valadez	Lori	10 E. Babcock St. Rm 443	Bozeman, MT 59715	587-6842	lori.valadez@usda.gov	USDA - NRCS
Van Rinsum	Larry	30 Lower Valley Rd.	Kalispell, MT 59901	752-4220	fcd@digisys.net	Flathead Conservation District
Vanderheiden	Alicia	P.O. Box 563	Helena, MT 50624	442-4002	alishazam@yahoo.com	Blackfoot Challenge
Vaughan	Dean	132 Bison Range Road	Moiese, MT 59824	644-2211 x208	Dean_Vaughan@fws.gov	US Fish and Wildlife Service
von der Pahlen	Constanza	P.O. Box 70	Polson, MT 59860	883-1341	constanze@flatheadlakers.org	Flathead Lakers
Walker	Robe	PO Box 1027	Hayes, MT 59353			Ft. Belknap
Walking Eagle	Myrna	P.O. Box 1027	Poplar, MT 59255	768-5155	eaglet@nemontel.net	Fort Peck Tribes
Watson	Vicki	Environmental Studies, UM - Missoula	Missoula, MT 59812	406-243-5153	txtrky@selway.umt.edu	EVST University of Montana
Wargo	Judee	P.O. Box 423	Fort Benton, MT 59442	622-3751	chouteau@mcn.net	MSU Extension - Chouteau
Weatherwax	Joseph	PO Box 2029	Browning, MT 59417	338-7421	Jweatherwas@BlackfeetNation.com	Blackfeet Environmental Office
Weaver	**Ray**	**PO Box 15**	**Wisdom, MT 59761**	**406-689-3177**		**Big Hole Watershed Committee**
Weigand	Francis	The Swift Bldg. 315 S. 4th East, Ste. 203	Missoula, MT 59801	541-9287		Watershed Education Network
Weiner	Gary	4030 Sourdough Road	Bozeman, MT 59715	587-1667	gary_weiner@nps.gov	National Park Service
Welch	Andy	1520 E. 6th Ave. Box 200901	Helena, MT 59620	444-9897	awelch@state.mt.us	MTDEQ
Wendland	Mike	HCCD, 206 25th St. W	Havre, MT 59601	759-5778 x102	mscw@ttc-cmc.net	Sage Creek Watershed (HCCD rep)
White	Michelle	101 Hulfine - MSU	Bozeman, MT 59717	994-7636	mdwhite@montana.edu	MT Water Center/Blue Water Task Force
Widhalm	Bernard	2668 Sullivan Bridge Rd.	Valier, MT 59486	278-3068		Pondera County Cons. Dist.
Wilbur	**Jim**	**1930 Ninth Avenue**	**Helena, MT 59601**	**457-8927**	**jwilbur@co.lewis-clark.mt.us**	**Lower Tenmile Watershed Group**
Wilkinson	**Charles**	**401 UCB**	**Boulder, CO 80309**	**303-492-8262**		**University of Colorado School of Law**
Williams	**Kathleen**	**1400 South 19th**	**Bozeman, MT 59718**	**994-6824**	**knwilliams@state.mt.us**	**MT FWP**
Woerner	Don	1226 Allendale Rd	Laurel, MT 59044	628-8141	don@laureleast.com	Frontier Heritage Alliance
Wolfe	**Mary Ellen**	**211 North Grand Ste. C**	**Bozeman, MT 59715**	**406-587-6352**	**mwolfe@bigsky.net**	**Community Mediation Center**
Woll	Pete	30 Lower Valley Rd.	Kalispell, MT 59901	752-4220		Flathead Conservation District
Wortman	Jayla	12 3rd St NW, Ste 300	Great Falls, MT 59404	727-3603 x125	cccd@mcn.net	Cascade County Cons. District
Wright	Kate Burnaby	305 N. Montana	Bozeman, MT 59715	587-9089	katew@mcn.net	Wildlife Conservation Society
Youngberg	John	502 S 19th, Ste 104	Bozeman, MT 59718	587-3153	johny@mfbf.org	Montana Farm Bureau
Zelazny	John	P.O. Box 8871	Missoula, MT 59801	544-7430	mt@montana.trout.org	Lolo Watershed Group
Ziemer	**Laura**	**321 E. Main #411**	**Bozeman, MT 59715**	**406-522-7291**		**TU Wester Water Project**

* Speakers and planning and logistics folks are in Bold

WATERSHED GROUP RESOURCES & REFERENCES

General Information

Know Your Watershed: Excellent source of information about many watershed issues. http://www.ctic.purdue.edu/KYW/

Groundwater Foundation: Good source of information and education for those groups grappling with ground as well as surface water. http://www.groundwater.org/

How to Save A River: A Handbook for Citizen Action
David Bolling, 1994
Island Press.
Presents in a concise and readable format the wisdom gained from years of river protection campaigns across the United States. Countless examples prove that ordinary citizens do have the power to create change when they know how to organize themselves. 266 pages; $18.00. Available from River Network: (503) 241-3506. New River Network Partners can receive *How to Save a River* as a Partnership benefit.

Starting and Running a Nonprofit Organization
Joan Hummel, 1996
University of Minnesota Press.
Designed for those who are forming new programs or reorganizing existing agencies. It provides how-to information for putting together a small, nonprofit organization. In addition to bibliographies at the ends of some of the chapters, there is a bibliography on nonprofit management at the end of the text. 147 pages. To order, call (800) 388-3863.

Starting Up: A Handbook for New River and Watershed Organizations
River Network
520 SW 6th Ave. #1130
Portland, OR 97204
info@rivernetwork.org
www.rivernetwork.org
Based on the experience of dozens of veteran leaders in the river and conservation movement, the articles lay out the critical moves every newly forming organization nees to thrive and grow. Articles include choosing a name, developing your mission statement, working with your board, fundraising, working with volunteers, pages of river-related examples and much more. Over 400 pages. $40. New River Network Partners can receive *Starting Up: A Handbook for New River and Watershed Organizations* as a Partnership benefit.

The Oregon Nonprofit Handbook
Technical Assistance Center (TACS)
1903 SE Ankeny
Portland, OR 97214
Phone: (503) 239-4001
Fax: (503) 236-8313

Although some material is Oregon specific—most is applicable to nonprofits anywhere. This newly updated how-to guide contains over 400 pages of helpful material for those starting new organizations as well as a handy reference book for established organizations. Comprehensive and well written. Contact TACS for ordering information.

The Non-Profit Handbook
Gary M. Grobman,1997
White Hat Communications
PO Box 5390
Harrisburg, PA 17110-0390
Phone/Fax: (717) 238-3787
This 300-page handbook is based on the *Pennsylvania Nonprofit Handbook,* a book originally published in 1992 with the help of more than two-dozen nonprofit executives and attorneys, and is now in its 4th edition. Each easy-to-read chapter includes a synopsis, useful tips, and resources to obtain more information. Cost is $29.95 = ($3 shipping and handling). To order contact White Hat Communications at the number above.

How to Form a Nonprofit Corporation
Anthony Mancuso, 1997
Nolo Press
Covers the legal aspects of incorporation and includes specific legal and tax instructions for each state as well as sample forms. The book is available for $39.95 and can be ordered by calling (800) 992-6656.

River Voices
River Network
520 SW 6th Ave. #1130
Portland, OR 97204
Phone: (503) 241-3506
Fax: (503) 241-9256
Email: info@igc.apc.org
River Network's quarterly journal. Each issue is devoted to either a river conservation topic or an organization-building topic. River Network Partners receive *River Voices* as a Partnership benefit. Annual Subscription: $40.

Organizing for Social Change: A Manual for Activists in the 90's
Kim Bobo; Jackie Kendall and Steve Max, 1991
Steven Locks Press.
A comprehensive manual for grassroots organizers working for social, political, environmental and economic change at the local, state and national level. Topics discussed range from direct action organizing and organizing skills to organizational support and resources. 271 pages; $19.95. Phone: (301) 320-2130.

Technical Assistance For Nonprofit Organizations

The Conservation Coalition
Contact: Ken Kerber, (603) 876-3324

PO Box 610
Marlborough, NH 03455
The Conservation Coalition helps state and regional groups serving areas with a population of 500,000 or more use direct mail to reach the highest concentration of conservation-oriented people at the lowest possible cost. They accomplish this by combining the mailing needs of several groups to take advantage of "economies of scale" in such areas as list rental, merge/purge services, printing and mailing. The Coalition will assist in obtaining mailing lists or will handle your entire mailing.

Environmental Support Center
1825 Connecticut Avenue, NW Ste. 220
Washington, DC 20009
Phone: (202) 329-7813
Fax: (202) 265-9419
http://www.envsc.org/
ESC is a valuable resource for strengthening the organization efforts of concerned citizens working to protect the environment. Their goal is to assist in improving the environment in the United States through enhancing the health and well being of regional, state and local organizations working on environmental issues. For further information, please contact ESC.

Foundation Center
79 5th Avenue
New York, NY 10003-3076
Phone: (212) 620-4230
Fax: (212) 807-3677
http://www.foundationcenter.org/
The mission of the Foundation Center is to strengthen the capacity of people in the nonprofit sector to attract and manage resources to meet community needs and solve community problems. The Center provides the community with a Library on Philanthropy and Nonprofit Management, Management Assistance Program workshops and management consulting service for nonprofit. Additionally, the Center publishes funding directories titled, *Environmental Grantmaking Foundations, The Foundation Directory, The Foundation Directory Part 2, The Foundation Directory Supplement, and the National Guide to Funding for the Environment and Animal Welfare*.

Institute for Conservation Leadership
2000 P Street, NW Ste 413
Washington, DC 20036
Phone: (202) 466-3330
Fax: (202) 659-3897
www.icl.org
Trains volunteer leaders and builds volunteer institutions to protect and conserve the earth's environment. Designs and conducts programs to help environmental and conservation leaders develop skills, networks, and resources. Programs include board development, fund raising, strategic planning, leadership training and time and conflict management.

National Council of Nonprofit Associations
1001 Connecticut Ave. NW Ste. 900
Washington, DC 20036
Phone: (202) 833-5740
Fax: (202) 833-5747
http://www.ncna.org/
The mission of NCNA is to advance the vital role and capacity of the nonprofit sector in civil society and support and give voice to state and regional associations of nonprofit organizations. By representing the views and concerns of its state and local members NCNA serves as a credible voice and champion of the sector at the national level.

National Park Service's Rivers, Trails and Conservation Assistance
The Rivers, Trails, and Conservation Assistance Program, also known as the Rivers & Trails Program or RTCA, is a community resource of the National Park Service. Rivers & Trails staff work with community groups and local and State governments to conserve rivers, preserve open space, and develop trails and greenways.
http://www.nps.gov/rtca/

Nonprofit Risk Management Center
1001 Connecticut Ave. NW Ste. 900
Washington, DC 20036
Phone: (202) 785-3891
Fax: (202) 833-5747
http://www.nonprofitrisk.org/

The Nonprofit Risk Management Center was established in 1990 to provide assistance and resources for community-serving nonprofit organizations. As a nonprofit, the Center is uniquely positioned to both understand and respond to questions with practical, affordable suggestions for controlling risks that threaten a nonprofit's ability to accomplish its mission.

River Network
520 SW 6th Ave. #1130
Portland, OR 97206
Phone: (503) 241-3506
Fax: (503) 241-9256
Email: info@rivernetwork.org
www.rivernetwork.org
Helping people understand, protect and restore rivers and their watersheds. Supports river and watershed advocates at the local, state and regional levels assists them build effective organizations and promote working together to build a nationwide movement for rivers and watersheds. Join the Partnership for $100 and receive various benefits including publications, resources, personalized assistance and more.

Society for Nonprofit Organizations
6314 Odona Road Ste One

Madison, WI 53719
Phone: (608) 274-9777
Fax: (608) 274-9978
http://danenet.wicip.org/snpo/
Promotes the exchange of ideas and information among nonprofit groups to help achieve excellence in leadership, management, and governance practices. Provides communication opportunities, telephone partnerships, travel discounts, and bimonthly issues of the publication *Nonprofit World*.

Strategic Workbook for Nonprofit Organizations
Amherst H. Wilder Foundation
Attn: Publishing Center
919 Lafond Avenue
St. Paul, MN 55104
Phone: (800) 274-6024
A general guide to strategic planning. Available for $25 (+$4 shipping).
Internet: http://www.wilder.org

Technical Assistance for Community Service (TACS)
Portland Office
1903 SE Ankeny
Portland, OR 97214
P/ 503.239.4001
F/ 503.236.8313
Email: info@tacs.org
Provides a wide variety of training and consultation services to assist nonprofit boards, volunteers and staff with financial management, board development, strategic planning, funding strategies, personnel management, diversity issues and leadership development.

U.S Environmental Protection Agency
EPA provides support, information and educational resources to watershed groups in their implementation of the watershed approach. Julie Dalsoglio is the EPA Helena MT contact, and is a contact for EPA Clean Water Act activities in MT. ((406) 457 5025; dalsoglio.Julie@epa.gov). Marc Alston is a general watershed group contact in the Denver EPA Region 8 office. ((303) 312 6356; alston.marc@epa.gov). In addition, EPA's web site (www.epa.gov) is a wealth of information on all EPA programs. Example topics on the Water website (http://www.epa.gov/OW/index.html) are: Water Quality Trading Policy, Map Your Waters, Innovative Responses for Sustainable Water Infrastructure, Watersheds, Wetlands, Oceans, Coasts, & Estuaries, Lakes, Monitoring & Assessment, TMDLs, Polluted Runoff, Volunteers, Analytical Test Methods, Drinking Water & Health Advisories, Human Health, Water Quality Criteria & Standards, Contaminated Sediments, Fish & Wildlife Consumption Advisories, Water Quality. EPA Region 8 also has its own web site. (http://www.epa.gov/region08).

Fundraising Resources

Federal Funding Sources

NRCS:

www.nacdnet.org/govtaff/FB/FB-SxS.htm

www.nrcs.usda.gov/programs/farmbill/2002/

www.usda.gov/farmbill/

EPA:

Updated Catalog of Federal Funding for Watershed Protection now online. http://www.epa.gov/watershedfunding.

Non Point Source

www.epa.gov/owow/nps/index.html

www.epa.gov/owow/nps/319hfunds.html

State Revolving Funds

www.epa.gov/owm/cwfinance/cwsrf/index.html

EPA Smart Growth

www.epa.gov/smartgrowth/topics/water_quality_funding.html

www.epa.gov/smarthgrowth/topics/other_funding.html

www.smarthgrowth.org/pdf/funding_resources.pdf

Watershed Initiative

www.epa.gov/owow/watershed/initiative/

PLEASE NOTE: WHERE SPACES MAY APPEAR IN WEB SITE ADDRESS IT DENOTES

AN UNDERSCORE_

5 Star Restoration Program (joint with NOAA)

http://www.epa.gov/owow/wetlands/restore/5star/
http://www.epa.gov/owow/waterhed/funding/awpd_rfip_fy2003.html

Assessment and Watershed Protection Program

http://www.epa.gov/owow/watershed/funding/awpd_rfip_fy2003.html

Department of Interior:

Fish and Wildlife Service; North American Wetlands Conservation Grants.

http://northamerican.fws.gov/NAWCA/grants.html

National Park Service; Rivers, Trails and Conservation Assistance program (RTCA)

http://www.nps,gov/rtca

National Park Service; Land and Water Conservation Fund
http://www.nps.gov/ncrc/programs/lwcf

NOAA:
http://www.nmfs.noaa.gov/habitat/restoration/funding.html

Office of Surface Mining:
Appalachian Clean Streams Program
www.osmre.gov/acsi.funding

Army Corps of Engineers:

National:
http://www.hq.usace.army.mil
http://www.usace.army.mil/where.html#Divisions
(For organizational / contact information)

State Funding:

http://www.tgci.com/funding/states.asp

Montana:
http://www.montanatu.org/article/issues

Miscellaneous:

Information on Federal sources
http://firstgov./Topics/Nonprofit.shtml#fundraising

Boise State University Environmental Finance Ctr.
http://ssrc.boisestate.edu. **866 627 9847**
(Directory of Watershed Resources)

Sonoran Institute
www.sonoran.org

Chronicle of Philanthropy
1255 23rd St. NW
Washington, DC 20037
Phone: (202) 466-1200
www.philanthropy.com

Contains the occasional profile, the how-to article, the statistical chart showing the latest trend in fundraising and a healthy classifieds section. Published biweekly. Subscription rate is $67.50/year.

Direct Mail Testing for Fund Raisers
Kachorek, Joseph P.
Precept Press, Inc.
160 West Illinois St.
Chicago, IL 60611

Fund Raising and the Nonprofit Board Member
National Center for Nonprofit Boards, 1988
National Center for Nonprofit Boards, Publications Department
2000 L Street, N.W.
Suite 411
Washington, D.C. 20036-4907
Phone: (202) 452-6262
Internet: http://www.ncnb.org
A concise, factual guide to five basic principles of board fundraising. Available as a booklet for $12 non-members and $9 for members of the National Center for Nonprofit Boards.

Directory of Funding Sources for Grassroots River and Watershed Conservation Groups
River Network
520 SW 6th Ave. #1130
Portland, OR 97026
Phone: 503-241-3506
Fax: 503-241-9256
Email: info@rivernetwork.org
www.rivernetwork.org
Updated annually, the online Directory provides activists with listings of likely multi-state funding sources that will be useful to grassroots river and watershed organizations. $35. River Network Partners receive a directory as a Partner benefit.

Discover Total Resources: A Guide for Nonprofits
Mellon Bank
Community Affairs Center, Rm 1830
One Melon Bank Center
Pittsburgh, PA 15258
Phone: (412) 234-5000
A wide range guide of funding resources available to nonprofit organization.

Getting the Word Out in the Fight to Save the Earth
Richard Beamish, 1995
The Johns Hopkins University Press.
An illustrated, step-by-step guide to successful communications, including press publicity, fundraising, membership building, direct marketing, newsletters, brochures, press releases and action alerts. Available for $15 through a special offer (sells for $25 at bookstores)

through the Clean Water Network, 1350 New York Ave., NW, Suite 300, Washington, DC 20005. (202) 624-9357.

Grassroots Fundraising Journal
Chardon Press.
PO Box 11607,
Berkeley, CA 94712.
Phone: (510) 704-8714
Fax: (510) 649-7913.
This bi-monthly magazine will help you raise money from community-based sources. Learn how to increase your income and diversify your sources of funding using proven, practical strategies, including special events, direct mail, major donor programs, membership campaigns, and more. Six packed issues for only $25.00 annual subscription.

Greening the Grassroots: How Wildlife and Habitat Organizations Can Write Winning Grants
The Wildlife Network
401 San Miguel Way
Sacramento, CA 95819
Phone: (916) 457-0433
Designed for the busy nonprofit manager and activist seeking a fast, streamlined education in grant-writing. If you're looking for the tools to develop a successful proposal and to build a strong, financially viable organization, this is the book for you. To order, send $16 (includes shipping and handling) to the Wildlife Network.

Nonprofit World Journal
6314 Odana Road, Ste 1
Madison, WI 53719.
Phone: (608) 274-9777
Fax: (608) 274-9978.
A bimonthly publication of the Society for Nonprofit Organizations. *Nonprofit World* provides a spectrum of information on nonprofit management and leadership.

River Fundraising Alert
River Network
520 SW 6th Ave. #1130
Portland, OR 97206
Phone: (503) 241-3506
Fax: (503) 241-9256
info@rivernetwork.org
www.rivernetwork.org
A quarterly publication designed to help river and watershed organizations support themselves financially. River Network Partners receive the *Alert*s as Partnership benefit. Annul Subscription: $40.

Fundraising for Social Change
Chardon Press, 1988
PO Box 864
Inverneess, CA 94937
Phone: (510) 704-8714

Email: chardn@aol.com
Internet: http://www.chardonpress.com
This is an excellent primer for those seeking to build their understanding of fundraising, as well as a resource for the more experienced fundraiser. The broad list of topics covers everything from methodology to management systems and strategies. $25 + $4 shipping.

National Committee for Responsive Philanthropy
2001 S. Street, NW Ste. 620
Washington, D.C. 20009
Phone: (202) 387-9177
Fax: (202) 332-5084
Internet: http://www.ncrp.org

Media

Community Change
Center for Community Change, Publications Dept.
1000 Wisconsin Ave., NW
Washington, DC 20007
Phone: (202) 342-0567
A guide to media for community groups and other nonprofits. 1-2 copies $7 each.

Board of Directors Resources

National Center for Nonprofit Boards
2000 L Street, NW Suite 510
Washington, DC 20036-4907
Phone: (202) 452-6262
Fax: (202) 452-6299
Internet: http://www.ncnb.org
NCNB is the only nonprofit organization working exclusively to help nonprofits throughout the country strengthen their board of directors. Individual Membership: $58/year; Organizational Membership: $225/year (up to 5 people).

Computers/Technology Resources

Technology Resource Consortium
Information Technology Resource Center
Deborah Strauss, Executive Director
59 East Van Buren
Chicago, IL 60605
Phone: (312) 939-8050
A national collection of groups that offer technical and computer assistance to nonprofits. The consolation fee varies from group to group within the consortium.

Ebase

ebase 2.0 is powerful and affordable database software created by TechRocks, a 501(c)(3) nonprofit organization, for other nonprofits. ebase software and manuals are distributed free of charge. www.ebase.org

Groundspring.org
Groundspring.org is a nonprofit organization that provides simple, affordable, and integrated services for small to medium-sized nonprofit organizations to help them become effective users of internet technology in their fundraising and management of donors and supporters.

OneNorthWest

ONE/Northwest (Online Networking for the Environment) is a non-profit organization based in Seattle, providing technology assistance to conservation activists and organizations in Alaska, British Columbia, Idaho, Montana, Oregon and Washington.

TechSoup
TechSoup.org offers nonprofits one-stop shopping for their technology needs. While TechSoup is aimed at the 650,000 small to midsize nonprofits, we are confident that staff from larger nonprofits will find useful information here as well. TechSoup is committed to leveraging its strength as a community-wide portal for the benefit of the entire community.

Other Helpful Resources

Keep in mind the valuable sources which exist within your community. Possible sources include:

River Network Resource Library: Over 400 online resources listed in a searchable database: http://www.rivernetwork.org/library/resource/index.cfm

Local schools and universities
Local schools and universities can often provide technical assistance, volunteers and interns; and assistance with special projects.

Local environmental and conservation organizations
Local environmental organizations will often provide fledgling groups with access to their office equipment (copier, phone, and computers) as well as offer friendly advice and good contacts and sometimes, shared office space.

Other Federal and State Agencies: Virtually every state and federal natural resource or land management agency in Montana can provide information, limited technical assistance, and potential leads to funding sources. For further information, try local websites or contact the MWCC.

Montana Resources

Montana Watercourse: Assistance, information, and education on Montana water resource issues for all water users. (406) 994-6671 or www.mtwatercourse.org

Montana Association of Conservation Districts: Can point you to local conservation district assistance, provides mini-grants for educational work, and is a point of information and assistance for all conservation districts in the state. http://www.macdnet.org/

Montana Water Center: Source of water information, water research, and technical training. http://water.montana.edu/default.asp See also http://water.montana.edu/watersheds/Resources/links.asp for extensive links to information.

Department of Natural Resources and Conservation Water Resources Division and the Conservation and Resource Division are active in assisting watershed activities and for providing funding. http://www.dnrc.state.mt.us/

Department of Environmental Quality Planning, Prevention and Assistance Division has links to further water information, sources of funding, and also can provide limited technical assistance on water quality and watersheds. http://www.deq.state.mt.us/ppa/index.asp
Department of Fish, Wildlife, and Parks. Technical assistance, and funding source for some types of watershed projects. http://www.fwp.state.mt.us/default.aspx

NRIS: Clearinghouse for natural resource information and GIS data, including extensive water and watershed resources. http://nris.state.mt.us/

And of course, the **Montana Watershed Coordination Council** (MWCC) is a serves as a statewide coordination network for Montana's natural resource agencies and private organizations and a forum for local watershed groups to help enhance, conserve, and protect natural resources and sustain the high quality of life in Montana for present and future generations.
http://water.montana.edu/watersheds/mwcc/default.asp

Wyoming Resources

Wyoming Association of Conservation Districts: http://www.conservewy.com/

South Dakota Resources

South Dakota Association of Conservation Districts: Has been working extensively to tie watersheds, 319 and the Farm Bill together. **http://www.sd.nacdnet.org/**

South Dakota Lakes and Streams Association: Preserve, protect and restore through stewardship, education and networking. http://www.sdlakesandstreams.com/

North Dakota Resources

North Dakota Association of Conservation Districts:
http://www.nacdnet.org/resources/ND.htm

Colorado Resources

Colorado Watershed Assembly: A non-profit organization that serves all watershed groups in the state of Colorado. http://www.coloradowater.org/cwa_main.asp

River Watch: A statewide water monitoring program that has produced excellent trend data and can advice on water quality monitoring. http://wildlife.state.co.us/riverwatch/

Colorado Watershed Network: Our Mission is to achieve healthy watersheds throughout the State of Colorado through the development, support and implementation of volunteer monitoring, local collaborative initiatives, sound stewardship, and educational activities. http://www.coloradowatershed.org/

Colorado Association of Conservation Districts: http://cacd.us/

Utah Resources

Utah Watershed Coordinator's Council: Chair: Jeff Salt: (801) 485-2550

Utah Association of Conservation Districts: http://www.uacd.org/

Special thanks to Kathy Luscher, River Network and Marc Alston, EPA

ACRONYMS/ABBREVIATIONS

BA – Biological assessment
BLM – Bureau of Land Management
BMP's – Best Management Practices
BPA – Bonneville Power Administration
BO – Biological opinion
BOR – Bureau of Reclamation
BRWC – Bull River Watershed Council
BUD – Beneficial use determination **(a finding based on sufficient credible data, that a state water is – or is not – achieving compliance with the water quality standards for its applicable beneficial uses)**
CD – Conservation District
COE – Corps of Engineers (Department of the Army)
CRG – Cabinet Resource Group
CSKT – Confederated Salish and Kootenai Tribes
CWA – Clean Water Act (1972 & 1977)
DEIS – Draft environmental impact statement
DEQ – Montana Department of Environmental Quality
DFWP – Montana Department of Fish, Wildlife & Parks
DNRC – Montana Department of Natural Resources
EA – Environmental assessment
EIS – Environmental impact statement
EPA – US Environmental Protection Agency
ESA – Endangered Species Act (1973)
et seq. – and the following
EWP – Emergency Watershed Protection program (NRSC)
FERC – Federal Energy Regulatory Commission
FF – Future Fisheries Improvement Program (FWP)
FWP – Montana Department of Fish, Wildlife & Parks
GIS – Geographical information system
HB – House Bill
HUC – Hydrologic unit
IDFG – Idaho Department of Fish and Game
KNF – Kootenai National Forest
KYW WS – Know Your Watershed workshop
LWD - Large woody debris
MDEQ – Montana Department of Environmental Protection
MDT – Montana Department of Transportation
MEPA – Montana Environmental Policy Act
MFWP – Montana Department of Fish, Wildlife & Parks
MPDES – Montana Pollution Discharge Elimination System (stormwater discharge permit)

MOU – Memorandum of Understanding (also sometimes a contract for services)

MWCC – Montana Watershed Coordination Council

NEPA – National Environmental Policy Act (1970)

NPS – Non-point source pollution

NRSC – Natural Resources Conservation Service (formerly SCS)

ORV – Off road vehicle

PDES – Pollution discharge elimination system (also MPDES)

PM&E – Protection, mitigation & enhancement (measure)

PCWC – Pilgrim Creek Watershed Council or Prospect Creek Watershed Council

PS – Point Source pollution

RCWC - Rock Creek Watershed Council

RDGP – Reclamation & Development Grant Program

RFP – Request for proposal

RFQ – Request for qualifications

ROD - Record of Decision

ROW – Right-of-way

SCD – Sufficient Credible Data **(Chemical, physical or biological monitoring data, alone or in combination with narrative information, that supports a finding as to whether a waterbody is achieving compliance with applicable water quality standards)**

SCS – Soil Conservation Service (now NRCS)

SHPO – State Historic Preservation Office

SOW – Scope of work

STORET – Short for STOrage & RETrieval (a respository for water quality, biological & physical data and is used by various agencies, universities and private entities)

TAC – Technical Advisory Committee

TCWC - Trout Creek Watershed Council

TMDL – Total maximum daily load (a type of water quality restoration plan)

TRTAC – Terrestrial Resources Technical Advisory Committee (Avista relicensing)

TU – Trout Unlimited

USACE – US Army Corps of Engineers

USDA – US Department of Agriculture

USEPA – US Environmental Protection Agency

USFS – US Forest Service

USFWS – US Fish & Wildlife Service

USGS – US Geological Service

WPAG – Watershed Planning Assistance Grant (DNRC grant program)

WC – Watershed council

WHIP – Wildlife Habitat Improvement Program (NRCS program)

WQ – Water quality

WRP – Wetlands Reserve Program (NRCS conservation easement program)

WRTAC – Water Resources Technical Advisory Committee (Avista relicensing)

WS – Watershed

WQA – Water Quality Act (1987)

223 – Refers to a type of DNRC grant (Montana)
303(d) List – Compilation of impaired or threatened water bodies in need of water quality restoration which is prepared by DEQ and submitted to EPA for approval.
310 – Refers to Montana State permit required from CD for work in or adjacent to a stream
319 – Refers to type of DEQ/USEPA grant
404 – Refers to COE permit required for filling wetlands

With thanks to Mike Miller

Watershed Groups

Montana Watershed Groups

Further Resources

Ashley Creek Watershed Group

County: Flathead

Description:
The Ashley Creek Watershed encompasses an area of 327 square miles (approximately 210,000 acres) immediately west of Kalispell. The stream network has a total length of 177 miles and is dominated by four streams --Ashley, Mount, Truman and Bales -- and four lakes -- Ashley, Lone, Monroe and Smith. Ashley Creek becomes a fourth order stream below the confluence with Mount Creek, and flows from the Smith Valley into the greater Flathead Valley, the city of Kalispell to the mainstem of the Flathead River about 15 miles upstream from Flathead Lake. The watershed is characterized by heavily timbered mountains in the headwaters and a mixture of farmland and residential dwellings at lower elevations near steams. Given the watershed's proximity to Kalispell, the region's largest city, it is becoming increasingly urbanized.

Why was the Watershed effort begun:
The Ashley Creek Watershed was founded in 2000 to strengthen the role of local residents in determining how best to carry out needed restoration efforts in the watershed. Ashley Creek has long been documented to be one of the most polluted streams in the greater Flathead Basin. The creek is listed as an impaired waterbody, and the ACWG process will insure a level of
citizen involvement in the efforts of the Flathead Basin Commission and other agencies to improve water quality throughout the basin. The watershed process further insures that local residents will become better informed of a variety of water quality-related issues and will serve as catalysis in their neighborhoods for the incorporation of better landowner Best Management Practices.

Accomplishments:
The ACWG meets once a month for up to three hours to update members on watershed restoration projects underway and to provide information from experts on water quality-related issues such as timber managment, road building and fisheries. ACWG members have been actively involved in overseeing a basin-wide assessment of riparian areas and wetlands and have prioritized reaches of stream to be addressed through restoration projects.
To date, one stream restoration project has been completed and funding has been received for additional projects. Grant funding has been solicited in 2003 that will, if received, result in the completion of seven priority restoration sites. Monitoring, both by consultants and ACWG volunteers, is being carried out at a number of stream and lake sites.

Future Plans:
The organization and presentation of a "Know Your Watershed" workshop is among the group's immediate objectives. Continuing its role in providing oversight for the selection, design and implementation of restoration projects is a priority, as is encouraging members to participate in a variety of other tasks, such as conducting volunteer water

quality monitoring activities at sites in the watershed and representing the group in other processes, such as the Upper Flathead TMDL Steering Committee, a project that will involve work in the adjoining Stillwater River watershed.

Biggest Challenge:
As with all citizen volunteer groups, the biggest challenge is to maintain the enthusiastic involvement of its members and recruit from within the group effective leadership and the time of participants for volunteer activities. To date, the ACWG has been relatively successful in this regard. Meetings are regularly attended by most of its citizen and agency members and its chair has provided consistent and dynamic leadership to insure that the group objectives are met.

Website: http://www.montanaweb.com/fbc

Contact:
Mark Holston
Flathead Basin Commission - Agency sponsor
ACWG, 33 2nd Street East
Kalispell, MT 59901
Phone: 406-752-0081
Email: fbc@digisys.net

Beaverhead River Watershed Committee

County: Beaverhead

Description:
The Beaverhead River begins at the discharge of Clark Canyon Dam. It flows through primarily agricultural land approximately 50 miles to it's confluence with the Ruby and Big Hole to form the Jefferson. Some twenty major tributaries flow into the Beaverhead.

Why was the Watershed effort begun:
To seek an understanding of the watershed – how it functions and supports the human communities dependent on it – and to build agreement on watershed planning issues among stakeholders with diverse viewpoints.

Accomplishments:
- The TMDL process is on schedule for completion in 2006.
- A reach of Stone Creek has been restored.
- A weed program is in progress.
- Two additional restoration projects have been targeted for completion by April 2004

Future Plans:
Complete the TMDL and move the focus to on the ground restoration on the targeted streams.

Biggest Challenge:
Sustaining public interest in the face of limited examples of on the ground success.

Contact:
Beaverhead River Watershed Committee
250 Fox Ridge Drive
Dillon, Montana 59725
Phone: 406-683-2713
Email: jnhoyrup@bmt.net

Big Hole Watershed Committee

County: Beaverhead

Description:
Undammed from its source high on the Continental Divide to its confluence with the Beaverhead and Ruby to form the Jefferson, the Big Hole River is 150 miles of wild trout fishery. The watershed takes in over 2500 square miles (1.8 million acres), yet is home to less than two thousand people. USGS HUC - 10020004

Why was the Watershed effort begun:
The BHWC was established in 1995. The BHWC was formed in response to local ranchers requesting assistance from the state of Montana for developing a coordinated effort to address the resource issues of the Big Hole River. Specific issues facing the community at that time include: drought conditions, a declining fluvial Arctic grayling population and water quality and quantity concerns.

Accomplishments:
Accomplishments include: developing and implementing a drought management plan, developing a system of stock-water wells, return flow study, water budget research, inventories on Deep Creek and Wise River, weed management and intern program, land use planning effort with 4 counties, recreation management rule making.

Future Plans:
Future plans: Continue supporting existing programs, expand water quality and resource inventory work with TMDL development, develop long-term recreation management plan, investigate off stream storage opportunities, expand irrigation efficiency and drought management opportunities.

Biggest Challenge:
Biggest challenge: working through politics, getting broad based support and participation of landowners.

Contact:
Jennifer Dwyer - Director
Bighole Watershed Committee
10281 Kelly Canyon Road
Bozeman, MT 59715
Phone: 406-994-0251
Email: Jendwyer@montana.net

Big Muddy Watershed

County: Daniels, Roosevelt, Sheridan

Description:
The Big Muddy Watershed is largely located in Saskatchewan and Northeastern Montana. The U.S. portion contains 2,561.22 square miles, or 1,639,181 acres. Over 95% of the acreage is located in Sheridan, Roosevelt, and Daniels Counties. The remaining acreage is located in North Dakota's Williams County.

Northeast Montana is in the glaciated plains region of Montana. In recent geologic history, a series of glaciers advanced southward through the area and actually diverted the Missouri River from the Hudson Bay. The force of the glaciers also shaped the plains landscape and influenced soils. Elevation ranges from about 1,900-2,600 feet. The Big Muddy Valley is one of the most prominent features in the landscape. The valley was a major outwash channel formed near the margin of a glacial front over 12,000 years ago. Today, the valley varies from 1-3 miles in width, and is disproportionate in size to Big Muddy Creek, which normally varies from 10-35 feet in width. It is about 115 miles in length.

Why was the Watershed effort begun:
The Big Muddy is listed as a water body in need of TMDL development. This, along with the need for resource information to document resource conditions, and the desire for a long-term planning tool compelled the District to implement this program.

Accomplishments:
- A Watershed Assessment of Big Muddy Creek by the NRCS and Range Management Services was completed in 2001 and a formal watershed group was formed.
- An application for a 319 Grant from the Montana Department of Environmental Quality to monitor water quality in the Big Muddy watershed was submitted in January 2003. The application was approved in June of 2003.

Future Plans:
- We are scheduled to hire a coordinator and begin monitoring the water quality in the watershed. This data will then be compiled and interpreted. We are developing an overall plan for the watershed and seeking additional funding for the conservation projects outlined in the plan.

Biggest Challenge
- The biggest challenge in developing an overall plan for the big Muddy Watershed is the large geographic area. The watershed encompasses 2 counties and portions of the Fort Peck Reservation.

Contact:

Mickey McCall
Sheridan County Conservation district119

N. Jackson Plentywood, MT 59254
Phone: 406-765-1801, Ext. 3

Big Spring Creek Watershed

County: Fergus

Description:
This 225,000 acre watershed in Central Montana drains into the Judith River and is part of the larger middle Missouri River Watershed Area of Montana. Land use of the watershed consists of forest (27%), agriculture (68%), urban/rural tracts (5%). Nearly 9,000 people live in the watershed including the town of Lewistown. Big Springs is the source of Lewistown's water supply and is one of the largest freshwater springs in the nation and a highly productive trout stream. There are approximately 440 mile of stream in the watershed.

Why was the Watershed effort begun:
The Big Spring Creek watershed was formed to head off concerns that had developed in the area. Principle concerns include protection of the source (springs) area (wellhead protection) for the City of Lewistown. Other principle concerns include prevention of non-point source pollution (sedimentation, nutrients, animal waste, pesticides) from agricultural lands as well as urban, and storm water runoff and septic tanks. Another major concern within the watershed is the rapid rate of housing developments and small tracts, which may cause the loss of good agricultural lands, impact the floodplains of watershed streams, and cause wildlife habitat fragmentations. A final concern is the protection and development of Big Spring Creek as a blue ribbon trout stream and expanded recreation opportunities along the Big Spring Creek corridor. Of high value is to preserve the "quality of life" and a strong economy in the watershed. Retention sustainable management of agricultural and forestry resources is an important element for the local economy.

Accomplishments:
Conservation Improvement Projects
- 47 Landowners have completed stream and riparian improvement projects on 102,825 feet or 19.5 miles of streams
- 21 landowners installed 15.2 mile of riparian and cross fencing
- 29 landowners completed stream restoration/steam-bank protection projects
- 4 major stream restoration projects have been completed
- 20 landowners installed 34 off stream water developments

Information/Education
- A 28-page Big Spring Creek Watershed book was published and over 3500 copies distributed.
- A Watershed Exhibit was displayed at the local banks.
- 7 Watershed tours have been held.
- 7 Feature article have been published in the local newspaper.

One of the largest stream restoration projects in Montana has been complete on the section of Big Spring Creek, Brewery Flats. The Big Spring Creek was diverted in a new channels and re-vegetation of the disturbed areas was accomplished. An interpretative/walking trail was constructed in the area as well. Also, the Society of American Foresters as their Centennial Project adopted the sight.

Future Plans:
The Current focus we are working with is daylighting Big Spring Creek where it currently flows underground through a tunnel through Lewistown on another major stream restoration project similar to the Brewery Flats stream restoration. We will be working with DEQ on the TMDL plan for Big Spring Creek. Also, we are still assisting landowners in the Big Spring Creek Watershed and currently have a fairly large stream restoration project in progress on Cottonwood Creek, a major tributary to Big Spring Creek. Finally, our group is in the process of continuing to develop Hiking Trails, particularly along watershed streams conducive to this type of development.

Biggest Challenge:
Current Challenges are obtaining funding for all of these activities. Our group has taken advantage of quite a number of grants and will continue to do so. Another challenge is the continuing education needs of watershed residents, including both the active members of the Watershed partnership and also the inactive.

Contact:
Big Spring Creek Watershed Partnership
NRCS
211 Mckinley Street
Lewistown, MT 59457
Phone: 406-538-7401

Bitter Root Water Forum

County: Ravalli
Affected Watershed: Bitterroot

Description:
The Bitter Root Water Forum considers the entire Bitterroot River drainage, from its headwaters in the Sapphire Mountains to the east and Bitterroot Mountains to the west, to the confluence with the Clark Fork River near Missoula, the main-stem and all tributaries, as our watershed address. To date, there is a greater emphasis placed upon those lands that lie within Ravalli County.

Why was the Watershed effort begun:
The Bitterroot River watershed, like most of the West, has been in conflict over water and water resources since the late 1800's. It is also a community where changing populations, growth, and development have brought considerable transformation to both the land use and the culture. Such changes have often been divisive. Attempts to organize solutions have also created communities of "action groups" all promoting their vision. There was and can still be a lot of talking at each other and not much talking with each other.

The Forum was created as an experiment in collaborative processes. Several local individuals began the initial investigations in 1993 of:(a) "water" as the future resources issue, and (b) locally led, collaborative community democracy. They met weekly for several months in facilitated sessions exploring this process. They requested assistance from the Bitter Root Resource Conservation and Development Area Corporation, their County Extension Agent, and MT DNRC Water Resources Staff.

A larger, multi-stakeholder audience was invited to an exploratory meeting on April 13, 1994 to develop a collaborative "watershed" initiative focusing on water and the community. The invitation proposed an effort that recognized the critical need for more knowledge about water quality and quantity in the Bitterroot River Basin.

The Forum continues today with a mission, "to recognize the critical need for more knowledge about water quality and quantity in the Bitterroot River Basin so that we may

- Explore the impacts of rapid growth,
- Then seek and implement solutions, through collaboration and consensus,
- To maintain and improve our quality of life."

Accomplishments:
The Forum has three general objectives that guide on-the-ground initiatives:

- Understand the basic hydrologic cycle of the Bitterroot River Basin (monitoring),
- Identify the water issues in the basin and facilitate communication among all interested parties (education), and
- Search for and implement solutions to water quality and quantity problems to achieve a balance between resources and users (policy).

Accomplishments to date include:
MONITORING: identify water quality & quantity issues that require some type of resolution.

- "Geology of the Eastside Aquifers in the Bitterroot Valley", by James Sears, Professor of Geology, University of Montana. May 1997.
- "Inventory Septic Locations in Ravalli County, Establish an Electronic Data Record, and Translate Data Into a GIS", by Geodata Services, Inc., June 1998.
- "Non Point Nutrient & Sediment Assessment Project in a Portion of the bitterroot River Drainage", by Daniel Hooten, Ravalli County Sanitarian's Office, March 1999.
- "Hydrogeology & Aquifer Sensitivity of the Bitterroot Valley, Ravalli County, Montana", U.S. Geological Survey Water-Resources Investigations Report 99-4219, February 2000.
- "Ground-water Resources in the Bitterroot Valley", Montana Bureau of Mines & Geology, 1997 – present.
- "Bitterroot Water Quality Education Project", July 2001 – present.
- "Bitterroot Headwaters Water Quality Improvement Plan", March 2002 – present.

EDUCATION: share both what is known & unknown with local communities, local government, water users, & other interest groups.

- Know Your Watershed workshops with The Montana Watercourse (Stevensville 1995, Mill Creek 1998)
- Learn the fundamental attributes that define a healthy watershed.
- Identify signs of health and signs of "dis-ease" in the field.
- Acquire information, tools, and hands-on training that prepare you to address issues and concerns in your watershed.
- Work together with your watershed neighbors to better understand the area you live, identify common concerns, and consider possible collaborative actions to address them.
- Monthly educational programs on the 3rd Wednesday, 3:00 to 5:00 p.m. at the Bitterroot Public Library.
- Data Management tools
- GIS workstation for viewing & querying digital data
- Assemble existing digital data
- Water Rights mini-courses, May – September 1999
- NEIGHBORING: A Stewardship Workshop Series, January – February 2000
- TAKING CARE OF THE BITTERROOT WATERSHED: A Citizen's Guide, published August 2003

POLICY: begin to develop water management strategies & activities to prioritized issues and resolve problems.

- Temporary Bitterroot Basin Closure Bill, HB 429, effective March 29, 1999.

OTHER PROJECTS:

- “Source Water Protection Plan, for the Town of Darby, City of Hamilton, Town of Stevensville”, November 1999 – June 2000.
- Mill Creek Watershed Coordinator, November 1999 – present.
- Sweathouse Creek Watershed Assessment, 1999-2001.
- Inventory of Bitterroot Valley Wetlands and Riparian Corridors, July 2001 – September 2003.
- Lower Skalkaho Creek Migratory Fisheries Restoration Plan, September 2001 – September 2003.
- Threemile Creek Riparian & Water Quality Education Project, September 2001-present.
- Bitterroot River Basin Water Monitoring & Water Center, September 2001 – present.

Future Plans:
The Forum continues to work toward implementation of their Watershed Plan. Organizationally the Forum places considerable emphasis on work groups or committees, of which there are typically five, to implement specific goals and actions. The Bitterroot is a large watershed, over 1.8 million acres, with only 24% privately owned. While issues like Basin Closure or evaluation of the County’s Growth Policy are basin/county wide, many issues are more successfully addressed on a smaller scale such as a nested, or tributary, watershed. Therefore the Forum has been active in promoting sub-basin watershed efforts or tributary projects. Its Tributary Committee plays an important role in this initiative with on-the-ground projects and multiple partners.

The Forum formalized its organizational structure by incorporating in 2002. It is now pursuing nonprofit tax status. With this reorganization a Board of Directors has been added to assist the Forums’ Coordinator.

Short term projects now in progress include:
Board of Directors:
- Priority setting for one, three, and five years.
- Water Forum and Board self-evaluation.
- Solutions to administrative insurance questions.

Education Committee:
- Water Rights and Water Measurement workshop with DNRC Missoula Regional Water Resources Office.
- Wetlands As Tools outreach to landowners, integrating information from existing wetlands project.
- Outreach to community & tributary groups of Tributary Projects.

Planning Committee:
- Assist community groups with outreach on Ravalli County Growth Policy sections regarding Water, Natural Resources, Ag & Open Space.
- Widely distribute the Water Forum’s new publication.
- Tributary Committee:
- Oversight and coordination on Tributary Projects.

    1. Skalkaho Creek: assessment plan for fish passage, followed by installation of automated head-gate, fish screens, & siphons.
    2. Upper Threemile/Ambrose Creek: complete stream assessment and hydrologic stream flow analysis, assist with community outreach for nutrient and sediment monitoring, riparian fencing, 7th & 8th grade stream monitoring, community survey; and assistance to landowners with upland range management and weed control.
    3. Mill Creek: stream channel restoration assistance to landowners, including streamside workshops; water and habitat quality monitoring pre- and post-restoration by local high school class.
- Prepare assistance to new tributary watershed groups.

Water Monitoring Committee:

- Programs at community meetings to widely distribute our Citizen Guide to the Bitterroot Watershed publication, including information to educate and motivate citizens to protect water quality.

We will know when we've met our long-term vision when improvement of the Bitterroot River watershed meets key beneficial uses of water (aquatic life, municipal, domestic, irrigation, recreation, and hydropower) and water sources and supply are preserved and protected.

Biggest Challenge:
The Bitter Root Water Forum has two on-going challenges. The first is attaining a funding level sufficient to maintain a "home", administrative functions, and a coordinator, all of which are key to a sustainable organization.

The second challenge is to maintain and grow enthusiasm about our watershed efforts. Sustaining a collaborative initiative within a basin where governmental structures emphasize command and control decision-making is difficult. While many wish to use collaborative processes and watersheds as a planning area they remain primarily interested in program or product delivery in short time frames. Such actions do not build sustainable efforts or sustainable communities. This kind of process does not respect community driven efforts that are sometimes longer in the making. It is hard to maintain engagement if individuals feel they don't have the involvement or power to affect change within their watershed. Our challenge is how to continue to engage residents and make changes that sustain positive watershed investments.

Website:
http://nris.state.mt.us/Mapper/ThemeList.asp?qLayer1=MTWatershed&qField1=WsdName&Cmd=Build+Reports&Buffer1=0&qValue1=Bitterroot+Water+Forum

Contact:
Roxa French - Project Coordinator
Bitter Root Water Forum
120 S. 5th Street, Suite 202

Hamilton, MT 59840
Phone: 406-375-2272
Email: brwaterforum@bitterroot.net

Blue Water Task Force

County: Gallatin

Description:
The Blue Water Task Force operates in the Gallatin Watershed. There are several entities working within this watershed, including the Montana Watercourse, the Gallatin Local Water Quality District, and the Bozeman Watershed Council. The Task Force is the only group, however, working in the upper reaches of the Gallatin River. The area covered by our monitoring activities includes approximately 25 miles of the Gallatin River starting from the boundary of Yellowstone National Park in the south and concluding several miles north of Big Sky. In addition, we collect water quality information up the West Fork and Dudley Creek drainages.

Why was the Watershed effort begun:
In 1999, the Big Sky Water and Sewer District applied for a permit to discharge treated effluent into the upper Gallatin River. Because there was not much information on the current status of water quality in the area, a group of concerned citizens was organized by Dr. Gill Geesey, Professor of Microbiology at Montana State University, and Jenny Ader, former president of the local chapter of the Surfrider Foundation. Workshops were held late in 1999 and provided information and instruction on proper water monitoring techniques for microbiology, aquatic insects, and periphyton. The Surfrider Foundation provided funding for the initial monitoring efforts. Because the Surfrider Foundation has multiple water monitoring groups on the west coast with the name Blue Water Task Force, the same name was given to the group that formed on the upper Gallatin River. River monitoring by local citizen volunteers began in May 2000.

Accomplishments:
Volunteers have collected water quality information almost every month since May 2000 on the following parameters: temperature, dissolved oxygen, pH, turbidity, nitrate, and total and fecal coliform bacteria. In addition, we have collected aquatic insect samples in the spring and fall of each year that have been analyzed by a professional consultant. A significant part of our program also involves community outreach and education. To accomplish these goals we have conducted six workshops on the microbiology, aquatic insects, periphyton, and riparian habitats of the Gallatin River. In July 2002 we began submitting brief articles to a local newspaper in Big Sky on topics related to water quality monitoring and aquatic health. These articles are published approximately every two weeks and are written and edited by volunteers. In cooperation with the Montana Watercourse and the Big Sky Institute, we introduced water quality monitoring into the 4th grade class at Ophir School in Big Sky. We also developed and maintain a website with information on water quality, monitoring activities and events, and photos of our volunteers at work: http://water.montana.edu/bwtf.

Future Plans:

We plan to continue our water quality monitoring efforts on the upper Gallatin River. We also would like expand our monitoring program to include habitat assessments and additional sites, increase community involvement in the program, and develop cooperative efforts with groups in the Gallatin Watershed.

Biggest Challenge:
Maintaining funding to support the management and activities of the Blue Water Task Force is one of the biggest and most time-consuming challenges. Engaging local citizens and keeping them interested in the program also requires hard work and creative thinking.

Website: http://water.montana.edu/bwtf

Contact:
Michelle White - Program Coordinator
Montana Water Center
101 Huffman Building
Montana State University
Bozeman, MT 59717
Phone: 406-994-6690
Email: mdwhite@montana.edu

Bozeman Watershed Council

Description:

We have expanded our area of interest from that of Sourdough / Bozeman Ck south of Bozeman, MT to all the tributaries that form the East Gallatin River. The Gallatin River is one of the three forks of the Missouri Headwaters. The land ownership in the East Gallatin drainage is divided between private lands, the City of Bozeman, US Forest Service and the State of Montana. Sourdough/Bozeman Ck, which has so far been the focus of our efforts, is a pristine, healthy alpine watershed that is a source of water for the City of Bozeman.

Why was the Watershed effort begun:

In 1991, concern about the aesthetic view resulting from a series of US Forest Service logging clear-cuts brought a diverse group of citizens together to problem solve a solution. This was the first time a group of citizens in our area had tried to work together with public land managers in a non-confrontational manner.

Accomplishments:

The resulting mitigation logging of the square clearcuts and existing heavy recreational use led to a series of public meetings that informed City of Bozeman officials as well as citizens about our watershed. Because of public interest, the Bozeman Watershed Council published a high quality educational map of the watershed mainly for area schools. We also brought the different public land managers together to sign a Memorandum of Understanding (MOU) in regards to communication about the activities proposed on their lands. We were part of the City of Bozeman Broad Spectrum Task Force that studied proposals for a dam on Sourdough/Bozeman Ck. Presentations were made to the Bozeman City Commission that showed the value of the watershed to wildlife (we have grizzly bears) , fisheries (we have cutthroat trout) and non motorized recreation (over 200 people a day). The current multi-year project has been the completion of a Resource Assessment of the drainage by private contractors and volunteers from the Bozeman Watershed Council. This detailed document is due to be published in Nov. 2003

Future Plan:

We have expanded our area of interest and mission in 2003 to that of all of the tributaries of the East Gallatin River. There are deadlines in 2007 for TMDL studies and storm water drain mitigation for the City of Bozeman. We intend to become involved with the private landowners who own land adjacent to the urban interface of Bozeman Creek as well as that part of the drainage that passes through and under the City. We are currently without a BWC Coordinator and intend to have public meetings in Fall/Winter 2003-04 to figure out where we are headed.

Biggest Challenge:

From 1991 - 2000, we had been a 13 member volunteer consensus council that rotated leadership and had an unpaid facilator, meeting once a month. We advertised for a 1/3 time coordinator to be paid with a grant from MT DNRC. Immediately, BWC Council members sat back and the coordinator went after money to fund his position that were not necessarily part of our goals and objectives. We are down to a core group of 4 or 5 people and the Conservation dist and DNRC will not award any grants until we get our act together (hopefully Jan 2004)

Contact:

Joan Montagne

Bozeman Watershed Council Co -Chair

17 Hodgeman Canyon Dr, Bozeman, MT 59718

Phone: 406-587-2406

Email: montagne@mcn.net

Bullhead Water Quality Project

County: Pondera

Description:
The Bullhead watershed covers over 60,000 acres in Pondera County, an area north of Conrad that straddles Interstate-15, within HUC 100030201. The watershed encompasses four small intermittent streams that flow into the Marias River or the Dry Fork of the Marias River. The watershed is primarily irrigated small grain and hay production, with dryland crop, pasture and rangeland spread throughout the project area. Irrigation return flow is responsible for most of the summer stream flow. Boundaries were first drawn based on the interested landowners/producers in 1989 and expanded to the west in 1993 when more producers wanted to participate.

Why was the Watershed effort begun:
The Bullhead Water Quality Association was formed to address the saline soil and water problems in the watershed. Over 2,500 acres were saline-affected including seepage into and from the canal/ditch delivery system, seepage into streambeds and the problems associated with formerly productive agricultural land. Since ground water does not respect property boundaries, it was important to involve multiple landowners to solve specific saline areas. Producers formed the Bullhead Water Quality Association and assessed themselves $0.75/acre to fund a portion of the administration and technical assistance.

Accomplishments:
Montana Salinity Control Association conducted a shallow ground water investigation to identify recharge areas and leaking canal/ditches. Major land-use changes have been implemented to reduce the leaching to the ground water system. The changes increased the water-use efficiency of dry and irrigated cropland that resulted in decreased saline-affected acres and improved production. The land-uses include more intensive cropping systems, improved Irrigation Water Management, more efficient individual irrigation systems, improvements in irrigation water delivery systems and significant acreage rotated to perennial forage. The Bullhead watershed was the first in MT to utilize the Water Quality Incentive Program (the fore-runner of the existing Environmental Quality Incentive Program). WQIP provided the needed incentive for producers to change land management on recharge areas that create saline discharge areas. The WQIP allocations were so positively received by producers that it was responsible for much of the project success. NRCS and FSA worked with the BWQA and MSCA to administer the USDA funds and programs. The Pondera County Conservation District worked with MSCA to administer the 319/NPS funds for technical and financial assistance.

Future Plans:
The BWQA and MSCA continue to monitor the ground water levels and track trend changes due to surface land-management. The information is used to qualify land and

producers for new USDA programs. The BWQA members have taken advantage of Best Management Practices in recent years, using private and federal funding and this will continue. The Bullhead information will be used to pilot a shallow ground water assessment mapping/planning tool integrating sustainable agriculture with water quality protection. If this pilot project is funded, the information will be transferable to the glaciated Northern Plains region of Montana.

Biggest Challenge:

Initially the biggest challenge was lack of federal programs to initiate change within the USDA agencies and with individual producers. As paradigms changed and technical and financial assistance became available, producers took advantage of them to make the land-use changes and improve their own productivity. In recent years the BWQA has not been as active. The BWQA Steering Committee interacts with MSCA and the Conservation District on an as-needed basis, but they remain committed and would initiate action if a new issue or opportunity arose.

Contact:

Mike Habets - Chairman
2046 Prairie View Road
Conrad, MT 59425
Phone: 406-278-3047
Email: mbhabets@tgrsolution.net

Clark Fork Coalition

Sub Major Basin: Flathead – Lower Clark Fork
County: Deer Lodge

Description:
The Clark Fork River is the ecological backbone of western Montana, rising on the western slope of the continental divide and flowing west toward Lake Pend Oreille in Idaho. The watershed gathers waters from such fabled tributaries as the Flathead, Big Blackfoot, and Bitterroot rivers, and its forests and prairies provide habitat for deer, elk, moose, bears and wolves.

Why was the Watershed effort begun:
The Clark Fork Coalition was founded in 1985 by a group of citizens concerned about clean water in the Clark Fork basin; currently we are a membership-based organization with over 1,200 contributors. Throughout our history, we've worked to educate citizens and decision-makers about water quality issues facing the Clark Fork River and its tributaries.

Accomplishments:
In the policy arena, we implemented a phosphate ban in the Missoula area; we helped secure Congressional 525 funds to study nutrients and to create the Tri-State Water Quality Council, of which we are a member; we helped broker the Voluntary Nutrient Reduction Program; we created a groundwater model of Milltown reservoir; and we helped create the Clark Fork River Technical Assistance Committee. We participated in the EPA's stakeholder group on the upper Clark Fork River in an effort to reach consensus on a cleanup strategy under Superfund, and we are currently part of a stakeholders group organized by EPA and Missoula County for the post-remediation future of Milltown reservoir. Recently we have also worked toward developing an affinity for the river through art and literature. In the fall of 2001, Russell Chatham created a suite of four lithographs for us as a vivid response to the Clark Fork River and its tributaries. We have also published a collection of essays, "The River We Carry With Us," from many of Montana's best writers, past and present.

Future Plans:
We will continue to work toward protecting and restoring water quality and river habitat in the Clark Fork Basin. We are preparing a "State of the Clark Fork" report which will look at economic, social and environmental indicators in the watershed in order to draw connections between the river's health and the community's health.

Biggest Challenge:
Engaging citizens and communities in river cleanup and restoration.

Website: http://www.clarkfork.org

Contact:

Tracy Stone-Manning - Director
Clark Fork Coalition
P.O. Box 7593
Missoula, MT 59807
Phone: 406-542-0539
Email: info@clarkfork.org

Clark Fork-Pend Oreille Watershed

Description:
The Clark Fork-Pend Oreille watershed spans 26,000 square miles across three states. The watershed includes the Clark Fork River basin in western Montana and northern Idaho, Lake Pend Oreille in northern Idaho, and the Pend Oreille River basin in northern Idaho and northeastern Washington. About 80% of the watershed is in Montana.

Why was the Watershed effort begun:
Citizen concerns about increased algae and aquatic weeds ("slime on the rocks"!) resulted in language in the Clean Water Act Reauthorization (1987) that directed EPA to study the 3-state watershed. The study resulted in a Report to Congress about nutrient pollution across the basin and included a Clark Fork-Pend Oreille Basin Management Plan. The plan describes management options to reduce nutrient pollution in the watershed and the Tri-State Water Quality Council was created to implement those options in order to reduce nutrients and algae.

Accomplishments:
Since 1993 we have: Developed an agreement (Voluntary Nutrient Reduction Program, VNRP) for significant pollution reduction measures for the Clark Fork River in Montana, through a collaborative process that included all major point source dischargers. Guided implementation of the VNRP measures. Negotiated an agreement between the states of Montana and Idaho that sets a nutrient loading target at the Montana/Idaho boundary to protect the water quality of Lake Pend Oreille. Coordinated the development of a nearshore TMDL for Lake Pend Oreille. Established a three-state water quality monitoring program that detects long term water quality trends across the watershed and gauges the effectiveness of water quality clean-up solutions. Supported the State of Montana in setting numeric nutrient standards for the Clark Fork River. Instituted non-point source projects with dairy farmers in the Bitterroot River valley, and landowners in Three-Mile/Ambrose Creeks (Bitterroot watershed) and the Pack River (Lake Pend Oreille watershed.) Created Water Festivals held annually for 5th and 6th grade students in Idaho, Washington and Montana. Built partnerships with groups and agencies across the watershed for achieving water quality goals.

Future Plans:
Over the next year we plan to: Complete a TMDL implementation plan for Lake Pend Oreille. Begin work on a TMDL for the Pend Oreille River and negotiate an agreement between the states of Idaho and Washington to protect the river. Finalize a TMDL for the Bitterroot River headwaters. Develop and implement an education program for the watershed's public at large.

Biggest Challenge:
Funding! Funding! Funding!

Website: http://www.tristatecouncil.org

Contact:
Ruth Watkins - Executive Director
Tri-State Water Quality Council
307 No. 2nd Ave
Sandpoint, ID 83864
Phone: 208-265-9092
Email: tristatecouncil@sandpoint.net

Critical Lands Project:

County: Flathead
Sub Major Basin: Flathead

Description:
The Flathead Watershed is located in northwest Montana and the southeast corner of British Columbia. Water flows from pristine headwaters in Glacier National Park, the Bob Marshall Wilderness and other wild lands, through forests, farms, and cities. The waters of the Flathead, Stillwater, Whitefish, and Swan rivers all join in Flathead Lake, the largest freshwater lake west of the Mississippi River. Altogether, the Flathead Watershed drains six million acres of scenic landscapes.

Why was the Watershed effort begun:
The very qualities that make the Flathead Watershed special – clean water, abundant wetland habitat, rural landscapes, unique native fish and wildlife communities, small town amenities – are a magnet for population growth. The Flathead valley is one of the fastest growing areas in the state. Flathead and Lake county populations grew 26% in the last decade, twice the rate for the state of Montana. The Flathead valley is beginning to face many of the problems associated with growth which plague other communities, such as loss of family farms and open space, strip development and sprawl, and degradation of riparian corridors, wetlands, wildlife habitat, air and water quality. Population growth and development threaten water quality, healthy ecosystems and quality of life.

Water quality in Flathead Lake is a barometer of the ecological health of the entire Flathead Watershed. As sediments and nutrients in its tributaries increase, primary productivity (the ability of the lake to grow algae) increases. Research shows that water quality in Flathead Lake has been steadily declining since 1977. Flathead Lake was listed as an impaired water body by Montana Department of Environmental Quality (MT 303d List) in 1996 and 2000. Consequently, the Total Maximum Daily Loads (TMDL) were recently determined for Flathead Lake to help manage nutrient loads to the lake.

The Critical Lands Project is a science-based, cooperative project to identify and protect or restore lands and waters critical to the quality of Flathead Lake and its tributaries. The goals of the project are to address water quality threats at the watershed level, to increase collaboration with key resource managers and research professionals from state, federal and tribal government agencies and other nonprofit conservation organizations, and to inform the public about the importance of conserving lands critical to water quality.

Accomplishments:
Past efforts to reduce nutrient loads to Flathead Lake and its tributaries have reduced phosphorus inputs to the water from point sources by upgrading sewage treatment plants in the upper basin for phosphorus removal, hooking up Evergreen (an unincorporated semi-urban area) to the Kalispell sewer system, and banning domestic use of phosphorus-containing detergents.

The Flathead Lakers hosted a series of Critical Lands Project Workshops to bring together resource management agencies, land conservation organizations, and other interested groups and individuals to develop criteria for critical lands, identify and prioritize critical lands, develop strategies to protect and/or restore critical lands and evaluate project progress.

With the assistance of project participants, the Flathead Lakers produced the Critical Lands Status Report (available in electronic form in the Flathead Lakers' website at www.flatheadlakers.org). This report evaluates lands in the North Flathead Valley that are critical for maintaining water quality, and other values such as wildlife habitat and recreation. The Flathead Lakers contracted with the Flathead Lake Biological Station to produce a series of Geographic Information System (GIS) maps of the Flathead River corridor that help describe resources and land uses.

The maps include:

- Land cover for 1990 and 1997
- Depth to water table
- Road density
- Housing density
- Flood Emergency Management Agency (FEMA) 100 and 500-year floodplain boundaries
- Vulnerable groundwater areas: The 'housing density' map was combined with the 'depth to water table' map to highlight vulnerable groundwater areas outside the sewer districts
- New structural development from 1990 to 1997.
- Public lands and conservation easements
- Sewer districts
- Active and inactive osprey and eagle nests along the main-stem of the Flathead River

Several projects are being conducted by various agencies that will help achieve the goals of the Critical Lands Project. The Flathead Lakers and other project participants support these projects where appropriate.

One such project is the Glaciated Wetlands of Northwest Montana Project. The Flathead Land Trust is leading this collaborative effort to protect more than 2,000 acres of wetlands, riparian habitat and surrounding upland areas in the Flathead and Mission valleys through the purchase of conservation easements. These areas lie along the Pacific Flyway and support breeding and nesting habitat for migratory waterfowl, shorebirds, and other wetland-dependent species. These lands also help protect water quality and provide opportunities for fishing, hunting and bird watching.

The Flathead Lakers are also working with other watershed/landscape projects in the Flathead Watershed. One project is the Voluntary Nutrient Reduction Strategy led by the Flathead Basin Commission, a non-regulatory organization formed by the Montana Legislature in 1983 to monitor and protect water quality in the Flathead.

Another project is the Northwest Power Planning Council's Flathead Subbasin Planning project. This effort is locally led by the Montana Department of Fish, Wildlife and Parks and the Confederated Salish and Kootenai Tribes to help direct Bonneville Power Administration (BPA) funding of projects that protect, mitigate and enhance fish and wildlife that have been adversely impacted by the development and operation of the Columbia River federal hydropower system.

The Flathead Lakers also conduct a number of activities to help inform the public about areas critical for maintaining water quality or pollution threats.

Future Plans:
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Website: http://www.flatheadlakers.org

Contact:
Constanza von der Pahlen
Critical Lands Project, Flathead Lakers
Phone: 406-883-1341
Email: criticallands@flatheadlakers.org

Deep Creek Watershed

County: Broadwater

Description:
Deep Creek is a fourth-order stream located in Broadwater County, Montana. The creek arises on the west slope of the Big Belt Mountains at an elevation of 6,520 feet and flows for about 29 miles to the Missouri River just south of Townsend, Montana. Perennial flow is generally maintained in the upper half of the stream, but significant and even complete dewatering is common in the mid and lower reaches. Water contributed by the Broadwater-Missouri canal in the summer months serves to maintain minimal flow in the lower three miles of Deep Creek.

The Helena National Forest covers 31,000 acres of the watershed and 25,000 acres are privately and State owned. Deep Creek is one of the few tributaries on the 17 mile section of the Missouri River between the Toston Dam and Canyon Ferry Reservoir that provides spawning and rearing habitat for rainbow and brown trout migrating out of the Missouri River and Canyon Ferry.

Why was the Watershed effort begun:
The Montana 1994 303d list identified Deep Creek as water quality limited. Cold-water aquatic life, recreation and swimming were listed as the impaired beneficial uses with siltation, primarily related to agricultural activities, as the cause of impairment. Monitoring conducted between 1991 and 1996 also implicated excessive water temperatures and stream dewatering as stressors to aquatic life in the lower reaches of Deep Creek. With the aid of 1991-1996 monitoring information, a TMDL was developed for Deep Creek in 1996. The emphasis of the Deep Creek project has been to improve the potential of this stream to provide natural spawning and recruitment for migratory trout. In 1991, Deep Creek was made available to spawning brown and rainbow trout by placing a large irrigation canal (which created a seasonal migration barrier) in a siphon beneath the streambed of Deep Creek.

Accomplishments:
The Deep Creek Watershed Restoration project began in 1996. The project area encompasses the lower 19.3 miles of the stream. Project restoration activities focused on areas with the greatest contribution from eroding banks and/or reaches with the greatest fisheries potential. In-channel restoration work focusing on bank stabilization using bio-restoration techniques and reestablishing proper channel geometry have been completed. Modifications have been made to channel morphology consisting of narrowing and establishing single thread channels in braided sections, adjusting point bar geometry and flood plain elevations, adjusting radiuses in tight or very irregular corners, reducing channel slopes in cases of excessive grade, by increasing channel length or installing grade control and establishing proper pool/riffle sequence.

The majority of the restoration sites are recovering very well. Lower bank vegetation cover is becoming established, willow growth is occurring and banks and channels are stable at most sites.

Future Plans:

There are seven project sites where further repair/maintenance is needed to prevent imminent failure. These sites represent potentially significant sediment sources and/or threats to project fencing should failure occur. Factors contributing to instability at these sites include one or more of the following: isolated damage by livestock, poor vegetation establishment, and damage during 1997 floods, channel entrenchment, and inadequate initial bank protection. At one additional site gully erosion is occurring on a high terrace slope above the stream bank. The stream bank is currently stable but the gullying is getting worse and represents both a significant sediment source and eventual threat to the stream bank.

A requirement of the Deep Creek TMDL plan is a five-year review to determine if TMDL targets have been met. If targets have not been met, this review process further evaluates adequacy of restoration activities, potential new sources and the targets themselves to determine what changes may be warranted. To date, review of the Deep Creek TMDS has not occurred.

A current DEQ 319 grant has been awarded to help with these efforts.

Biggest Challenge:

Getting the landowners that have participated to accept some responsibility to monitor and reasonably maintain the restored areas on their property.

Contact:

Charlotte Lewis, District Administrator
Broadwater Conservation District.
415 South Front Street
Townsend, MT 59644.
Phone 406-266-3146 ext. 104

Flathead Basin Commission

County: Flathead
Sub Major Basin: Flathead

Description:
The Flathead Basin encompasses 8,587 square miles (approximately six milliion acres) in Northwest Montana and Southeast British Columbia. It is the most pristine and ecologically diverse of any watershed shared by the U.S. and Canada. The basin is the largest tributary to the Clark Fork River and part of the extensive headwaters of the Columbia River. Flathead Lake, the largest freshwater lake in the U.S. west of the Mississippi, is the basin's catchment. Into it flow waters from the three forks of the Flathead River (North, Middle and South), and the Swan, Whitefish and Stillwater rivers. The watershed contains a diverse community of plants and animals, including over 300 species of aquatic insects, 22 native and introduced species of fish, the grizzly bear, bald eagle, bull trout, lynx, peregrine falcon, grey wolf and others. The basin includes the western portion of Glacier National Park, virtually all of Flathead and Lake counties, a small portion of Missoula County, and most of the Flatehad Indian Reservation. The human population of the basin is approximately 80,000, including the municipalities of Kalispell, Whitefish, Columbia Falls, Polson, Ronan and St. Ignatius.

Why was the watershed effort begun:
The FBC was established in 1983 by the Montana Legislature to monitor and protect the water quality of the basin. The possibility of large scale mining activity in the headwaters of the North Fork of the Flathead River in British Columbia, a potential source of large scale pollution, was one of the driving factors in the creation of the watershed effort. In recent years, working to offset the environmental consequences of population growth and development and carrying out projects to achieve pollution reduction for the Flathead Lake Total Maximum Daily Load (TMDL), an EPA-mandated effort, have become FBC priorities.

Accomplishments:
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Future Plans:
Maintenance and expansion of existing programs, with an emphasis on meeting interim TMDL water quality targets for Flathead Lake throught the FBC's Voluntary Nutrient Reduction Strategy.

Biggest Challenge:
Primarly challenges have include obtaining sufficient funding to maintain operation of the FBC and provide for education and pollution reduction/watershed restoration projects.

Website: http://www.digisys.net/fbc

Contact:
Mark Holston
Flathead Basin Commission
33 2nd Street East, Kalispell, MT 59901
Phone: 406-752-0081
Email: fbc@digisys.net

Flathead Lakers

Flathead Lakers
PO Box 70
Polson, MT 59860
406-883-1346
fax: 406-883-1357

lakers@flatheadlakers.org
www.flatheadlakers.org

Mission Flathead Lakers: Working for clean water, healthy ecosystems, and lasting quality of life in the Flathead Watershed.

(The following information was taken from Website www.flatheadlakers.org)

Describe your Watershed:

People working together for clean water, healthy ecosystems and lasting quality of life in the Flathead Watershed. Friends and neighbors, year round and part-time residents, who believe that: Flathead Lake serves as a barometer of the health of our watershed. A healthy economy and clean water go hand in hand. Our children and grandchildren deserve clean water and a healthy environment.

Accomplishments:

Brought agencies and organizations together to protect and restore lands critical to lake quality through our Critical Lands Project.

Initiated a project to reduce negative impacts of personal watercraft.

Insisted that a drought management plan be completed to better manage summer lake levels during droughts.

Worked to secure funding for water quality monitoring and raised funds during an emergency funding shortfall.

Worked to assure upgrading of sewage treatment plants for phosphorus removal. Intervened to improve the mitigation plan for Kerr Dam and ensure citizen participation, resulting in a plan for recovery of the lower Flathead River and compensation for habitat loss.

Helped ban phosphate detergents in Flathead and Lake counties.

Haskill Basin Watershed Council

Flathead County

Description:
The Haskill Basin drainage is located north and east of the City of Whitefish and Whitefish Lake, in northwest Montana, Flathead County. Haskill Creek is a tributary to the Whitefish River. The watershed extends from The Big Mountain ski resort in the northern part of the drainage to the Whitefish River to the south. The drainage encompasses approximately 8,200 acres (Private - 4,432 acres, USFS - 3,370 acres, and State - 520 acres). The City of Whitefish obtains most of its drinking water from upper Haskill Creek. The drainage is impacted in some form by residential and recreational development and agricultural practices.

Why was the watershed effort begun:
Although Haskill Creek is not listed as a water quality limited waterbody by Montana DEQ in 2002, Haskill Basin was chosen by the Flathead Conservation District (FCD) as the highest priority watershed for planning and restoration work in the District. The Haskill Basin Watershed Council has been in existence since June of 2000. The mission of the Haskill Basin Watershed Council is to maintain and enhance the chemical, biological and physical integrity of Haskill Creek by a voluntary and cooperative effort.

Accomplishments:
Since the first meeting in June of 2000, the Haskill Basin stakeholders have developed a mission statement, assembled a Board of Directors, a technical advisory team and have developed a list of items of concern related to non-point source pollution. The FCD obtained a DNRC Watershed Planning Assistance Grant in the summer of 2000 to fund the start-up of the Council. A second Watershed Planning Assistance grant was obtained in September 2001 from DNRC to fund Phase 1 of a watershed assessment. Phase 2 of the watershed assessment is being funded by a 2002 319 grant.

Future Plans:
Restoration work on Haskill Creek will hopefully be funded by a 2003 319 grant. Haskill Basin Watershed Council is committed to developing a comprehensive watershed plan for the drainage which will maintain, or where needed, restore the chemical, biological and physical integrity of Haskill Creek by reducing non-point pollution, stabilizing stream banks, and improving stream habitat and riparian vegetation in order to restore native fish populations and improve water quality.

Biggest Challenge:
All involved would likely agree that obtaining adequate funding to implement restoration projects and provide for administration and management of the watershed councils is likely the biggest challenge.

Contact:
Mike Miller

548 Elk Creek Road, Heron, MT 59844
(406)847-5560
mmiller@blackfoot.net

Jefferson River Watershed Council

Affected: Jefferson

Description:
The headwaters of the Jefferson River form where the Ruby, Beaverhead and Big Hole rivers come together near Twin Bridges, MT. The watershed includes drainage from the Highland Mountains (west), Bull and Elkhorn Mountains (north), and the Tobacco Root Mountains (east & south). Average annual rainfall in the valley is 9.65 inches with May and June being typically the wettest months. The average annual snowfall is 11 inches with the majority coming in January, February and March.

Landownership is 57% private, 28% Forest Service, 15% State lands and Bureau of Land Management. Rangeland and forest areas are the primary land uses, while agriculture comprises around 15% of the land use.

Why was the watershed effort begun:
The Jefferson River Watershed Council was created out of concern by the local angling community about decline in fish populations in the Jefferson River and interest among local ranchers and irrigators in solving ongoing water shortages. The Council was created in the spring of 1999.

The Mission of the Jefferson River Watershed Council (JRWC) is to coordinate efforts, through a spirit of community cooperation and sharing, that will enhance, conserve, and protect the natural resources, quality of life, and economic vitality of the Jefferson River watershed.

Accomplishments:
Mission Statement and Goals, Definition of Consensus, Ground Rules, Drought Management Plan, Canal Lining Project (22 miles) - May 2002, Irrigation Efficiency Practices with the National Center of Appropriate Technology (NCAT)- multiyear partnership and ongoing efforts, MWCC Stewardship Award, July 2002.

Current Projects:

1)Weed Project – Jefferson River Corridor, 2002 +, Current Status: Mapping is expected to start in late fall 2002. This will be an on-going project. Once weeds are mapped and entered into a data base, a weed control program will be implemented. Additional funding will be necessary once current grant of $38,000 is exhausted.

2)Infra-red Aerial Photography of Jefferson River Corridor, Summer 2002, Current Status: 311 photographs obtained in an August flight. Digitizing and geo-referencing are scheduled for winter of 2002-2003.

3)Conifer Encroachment Study, 2002, Current Status: The Hay Canyon Creek drainage has been selected to determine the impacts of conifer encroachment in a small watershed.

Instruments have been installed to collect surface water flow data and historical information related to the area is being collected. Expected completion is August/September 2003. Funded by HB223 and Grazing Lands Conservation Initiative grants.

4)Watershed Data Collection and Characterization, Current Status: Project is expected to begin in December with a report is expected by April 2003.

5)Irrigation Canal Seepage Study, 2002-2004, Current Status: Eight flow measurement devices have been installed, three in canals and one in the Jefferson River. Data collection is underway.

Future Plans:

1) Watershed Management Monitoring Plan for Total Maximum Daily Load (TMDL) Development, 2003/2004 - This project is expected to begin once the Watershed Characterization Report is completed.

2) Revegetation Projects, 2003-2004 - The results of weed and riparian vegetation mapping are expected to be reviewed in early 2003. Identification of riparian planting projects and implementation are expected in late fall 2003 or early spring 2004.

3) Complete Watershed Assessment, 2003/2004 - Discussions are currently underway to determine data and funding needs. Assessment costs are being researched and a funding source is being pursued. If successful this will provide funding by April 2003. The assessment could be completed during the field season of 2003 if the funding becomes available.

4)Develop a Water Quality Restoration Plan for the Upper Jefferson River, 2005 - A long tern goal of the Council is to develop and implement a restoration plan that will remove the Jefferson River from the DEQ 303(d) List.

http://www.jeffersonriverwc.homestead.com

Contact:
Roxann Lincoln
Coordinator
725 Hillsdale, Helena, MT 59601
(406) 442-8139
roxlincoln@msn.com

Kootenai River Network

Kootenai County

Description:
The Kootenai River Basin is an international watershed encompassing about 18,000 square miles of British Columbia, Northwest Montana and Northern Idaho. The Kootenai River originates in British Columbia's Kootenay National Park, north of Mount Assiniboine, the highest point in the basin at 11,867 feet. From there it flows 485 miles through Montana and Idaho, eventually returning to Canada and Kootenay Lake. Basin topography is dominated by steep mountainous country, 90% of which is forested or above tree-line. It drops nearly 10,000 feet in elevation as it flows through the basin.

Rainfall is relatively plentiful throughout the basin, making it the second largest tributary to the Columbia River system in terms of runoff volume, though it is only the third largest in terms of drainage area. Only the Snake River contributes more volume, and does so from a much larger watershed area.

Why was the watershed effort begun:
The Kootenai River Network (KRN) is a US 501(c)(3) non-profit organization that accomplishes its goals through grants and contributions from collaborators. The group formed late in 1991 in response to citizen's concerns of threatened or deteriorating water quality and aquatic resources in the Kootenai River Basin.

Mission Statement: The Kootenai River network (KRN) is a cooperative international partnership of individuals, agencies, and diverse citizen groups dedicated to the utilization, restoration, promotion, and protection of water resources in the Kootenai River watershed.

Goals: The goals of the KRN are to:
1. Involve individuals and their communities in sharing the value of the Kootenai River watershed.
2. Improve communication among agencies and diverse citizen groups throughout the Kootenai River watershed.
3. Facilitate habitat enhancement and rehabilitation.
4. Fully use best available science practices to facilitate proactive water resources management.
5. Pursue coordination of efforts regarding water resources models and measurement techniques.

The KRN fosters communication and implements collaborative processes among private and public interests in the watershed. These cooperative programs lead to improved resource management practices and the restoration of water quality and aquatic resources in the basin. We seek to empower local citizens and groups from two states, one province, two countries and affected tribal nations to collaborate in natural resource management in the basin.

Accomplishments:
Projects completed by the KRN thus far include:

- Inventory of water quality, habitat and improvement priorities with participating landowners and land managers
- Six separate stream restoration projects
- Comprehensive water quality monitoring plan for the Kootenai River Basin
- Onsite facilitation and coordination services for public information and involvement
- Participation in TMDL and subbasin resource management planning
- KRIS Kootenai, the pilot of a fisheries and water quality database management system designed to readily organize and share information throughout the Kootenai River Basin (February 2003).

Future Plans:
KRN is expanding its role throughout the communities of the basin. Education and outreach goals include in-classroom and field presentations, teacher education, group presentations and public programming. We're expanding our volunteerism program to include roles for water quality monitors, public educators, river recreation leaders, and forming a corps of those we can call upon for participation in habitat enhancement and rehabilitation projects. We're creating opportunities for local citizens to serve on the KRN Advisory Council in order to accomplish our mission.

Using the resource as a basis, one of the KRN's most significant plans is to take a leadership role in enhancing sustainable economic and community development opportunities within the basin. The KRN will be a catalyst for communities along the Kootenai River corridor to "capture the value of the Kootenai River!"

Biggest Challenge:
Community recognition and engagement.

http://www.kootenairivernetwork.org

Contact:
Kootenai River Network
PO Box 491, Libby, MT 59923
(406) 295-5834
director@kootenairivernetwork.org

Little Missouri Watershed

Description:
The Little Missouri Watershed is approximately 78 miles long. It begins its origin in Wyoming and travels through the southeastern corner of Montana all miles being in Carter County. The lands along the river are all private. The river is an intermittent stream. The watershed is primarily utilized for grazing and haying.

Why was it formed:
The Carter County Conservation District focused on this stream along with five other streams in Carter County in 1994. The 1994 State 303 (d) List listed six streams in Carter County as Impaired. It was decided by the board of supervisors to challenge the classifications of our streams.

Accomplishments:
Five of the six streams have been removed from the State 303 (d) list. The Carter County Conservation District has established and leads a formal monitoring program that is done annually with each stream. The District coordinates the stream monitoring with DEQ and NRCS.

Future Plans:
The District will continue to follow the monitoring program and coordinate efforts with DEQ and NRCS. The Carter County Conservation District is also leading the Thompson Creek Task Force. This Task Force will be assessing and evaluating Thompson Creek. This stream is a major tributary to the Little Missouri River and is listed as Impaired on the 303 (d) List. The representatives on this task force represent the following entities: American Colloid, Bentonite Performance, BLM, DEQ, NRCS, MSU Extension, and the Conservation District. It is the objective of this group to have a unified monitoring program with the listed entities and evaluate the impacts of the existing and future uses within the watershed. Grant dollars were received to purchase four HOBO Weather Stations. The weather stations will allow the team to evaluate the watershed with more accuracy and will enable the decision makers to make sound decisions. The technology available to us can open new avenues and truly help us to understand how our watersheds are aging.

Biggest Challenge:
The District viewed and continues to view challenges as a learning phase of our water program. If we were to single out any one challenge it would have to be money. The Carter County Conservation District has a limited budget. There were initially costs we had to incur to prepare ourselves for a monitoring program. We were able to work cooperatively with our partners and receive grant dollars to over some our financial challenges.

Contact:
Carter County Conservation District
P.O. Box 313, 400 Mormon Street Ekalaka, MT 59324

406-775-6355 ext. 101
gbruski@mt.nrcs.usda.gov
Lower Clark Fork Watershed Councils

Description:
The lower Clark Fork River watershed, located in Sanders County in northwest Montana, drains an area of approximately 1,000 square miles, and encompasses the river reach flowing approximately sixty miles from the Thomson Falls Dam to the Noxon Rapids Dam, then to the Cabinet Gorge Dam at the Montana – Idaho border. There are currently seven active watershed councils in the lower Clark Fork, including Elk, Prospect, Rock, Whitepine, Trout, and Pilgrim Creeks and Bull River. In an effort to streamline the process for administering and managing these seven watershed councils, a new "umbrella" watershed council has been recently formed. The formation of this group will benefit all lower Clark Fork watersheds by expanding funding opportunities and maximizing administrative efficiency.

Why was it Formed:
Beginning in 1996, watershed planning efforts in the lower Clark Fork have been sponsored by Green Mountain Conservation District (GMCD) to protect and restore seven individual watersheds. Elk Creek, the first council, was formed to address problems caused by two rain on snow flood events. The Elk Creek project was so successful that over the next few years, other local drainages also decided to form councils to address various problems.

Accomplishments:
In 1998, a TMDL plan for Elk Creek was approved and in April 2000 and GMCD received the 2000 Montana Watershed Stewardship Award. To date, there have been numerous successful restoration and management projects in five of the seven watersheds.

Future Plans:
The lower Clark Fork watershed councils will continue to function and hope to maintain, or where needed, restore the chemical, biological and physical integrity of the lower Clark Fork tributaries by reducing non-point pollution, stabilizing stream banks, and improving stream habitat and riparian vegetation in order to restore native fish populations and improve water quality in order to remove listed water bodies from Montana's 303(d) list.

Biggest Challenge:
All involved would likely agree that obtaining adequate funding to implement restoration projects and provide for administration and management of the watershed councils is likely the biggest challenge.

Contact:
Jean Dunn
District Administrator

Green Mountain Conservation District - Council Sponsor
PO Box 1329, Trout Creek, MT 59874
(406)827-4833
gmcd@blackfoot.net

Lower Tenmile Watershed Group

Description:
Tenmile Creek is a perennial, fourth order stream which drains approximately 200 square miles of mountainous and valley terrain which is part of the Upper Missouri River Basin and is located in southern Lewis and Clark County near the City of Helena, Montana.

The Lower Tenmile Creek is identified as beginning with the reach below the City of Helena Tenmile Water Treatment Plant (U.S. Highway 12) and flows about 15 miles to its confluence with Prickly Pear Creek approximately one mile southwest of Lake Helena. The Lower Tenmile Creek watershed drains about 150 square miles and includes the tributaries of Sevenmile Creek, Colorado Gulch, Blue Cloud Creek and most of the City of Helena.

Why was it Formed:
Tenmile Creek is ranked as a high priority on the State of Montana 303(d) list of impaired streams. The Montana Department of Environmental Quality draft 2000 Water bodies in Need of Total Maximum Daily Load (TMDL) noted Lower Tenmile Creek cannot support aquatic life, cold water fishery, nor drinking water. The report further stated Lower Tenmile could only partially support recreational activities. The document lists metals, arsenic, cadmium, copper, lead, zinc, and flow alteration as probable causes for impairments to the creek. Irrigated crop production, road/bridge construction, land development, acid mine drainage, abandoned mining, channelization, flow regulation/modification, and habitat modification are listed as probable causes of impairment to the Lower Tenmile Creek.

The City of Helena withdraws water from Tenmile Creek to supply a majority of Helena residents with their drinking water. Agricultural producers along the Lower Tenmile also withdraw irrigation water during the spring and summer months to water crops. Both of these activities dewater segments of Tenmile Creek every summer. In contrast, the stream floods during late winter and early spring, causing significant amounts of property damage, as well as contaminating wells in close proximity to the creek.

Population growth and changes in land use along Tenmile Creek have resulted in ever-increasing concerns about surface water levels and water quality in these developing regions, as well as the stream's impacts on groundwater recharge to the Helena Valley aquifer. Accelerated development of lands adjacent to Lower Tenmile Creek has accelerated in the since 1990 and within the Helena Valley and this watershed. These changes in land use within the watershed have the potential to increase the degradation of the natural resources of the Lower Tenmile Creek Watershed.

Recent studies by the Wetlands Community Partnership show a loss of wetlands and riparian vegetation associated with the Lower Tenmile stream corridor. This loss of wetlands has resulted in diminished water storage, diminished groundwater recharge, diminished erosion control, diminished pollution abatement, and the loss of aquatic and terrestrial wildlife habitat.

It is believed that the Lower Tenmile Watershed Group (LTWG) composed of residents, decision-makers, landowners along the creek, and stream users are entitled to have an understanding of the stream's value and dynamics and the status of the watershed's resources that is provided by the group's activities. The LTWG also provides a means and an opportunity to be a part of watershed planning for the Lower Tenmile Creek watershed and interaction with natural resource agency representatives who also participated in the LTWG.

Accomplishments:
A Tenmile Creek: Know Your Watershed Workshop was held in May 2002. The Lower Tenmile Watershed Group has organized itself since its initial meeting in June of 2002 and held monthly meetings with a variety of presentations on different aspect of stream dynamics, regulatory issues, and watershed planning initiatives. Planning for multiple stream improvement projects, a spring riparian zone planting event and a municipal storm drain stenciling project are underway. Also, the LTWG has adopted a Mission Statement and Goals and Objectives list for the organization (attached).

Future Plans:
Several stream improvement projects will be completed in 2003. A spring riparian zone planting event and a municipal storm drain stenciling project are also planned. The group intends to participate in the Total Maximum Daily Load process and development of Water Quality Restoration Plan for Tenmile Creek. This effort is to be conducted by the U.S. Environmental Protection Agency for the Lake Helena area in 2003. The group hopes to continue to hold monthly meetings and grow in its membership of community residents.

Biggest Challenge:
The main challenge is to get the group organized and focused on direction, goals, and projects that is decided by group consensus and maintains the interest of our participants as well as being beneficial to the future of the watershed.

Contact:
Jim Wilbur
Lewis and Clark County, Water Quality Protection District
1930 Ninth Avenue, Helena, MT 59601
(406) 457-8927
jwilbur@co.lewis-clark.mt.us

Marias River

Description:
The Marias River headwaters are formed with the intersection of Cut Bank Creek and Two Medicine River at the Toole, Pondera, and Glacier County border. The Marias River flows east from the headwaters through Toole Co. and into Lake Elwell (aka Tiber Reservoir), and then east-southeast through Liberty and Hill counties and then south into Chouteau County where it flows into the Missouri River just east of Loma. Tributaries include the Dry Fork, Pondera Coulee, Basin Coulee, Dugout Coulee, Black Coulee, Cottonwood Creek. Trail Creek, Eagle Creek, and Chip Creek. The Marias River Watershed encompasses 3,294,259 acres with 91.3% in private ownership, 5.7% state trust land and 3% federal lands. Elevations range from 2,580 feet to 9,552 feet above sea level. Topography includes mountainous terrain in Glacier Park to the west to gently rolling and generally level terrain on the east. There are seven conservation districts in six counties involved in this effort: Glacier, Pondera, Toole, Liberty, Hill, Big Sandy and Chouteau.

Why was a watershed effort begun:
The Marias River Watershed organization was formed in 2002 by concerned residents who wanted to protect, improve and enhance the watershed, using local leadership, while preserving an independent lifestyle and ensuring the public benefit to all the natural wonders and resources available. Discussions alluded to specific future events, such as the Lewis and Clark Bicentennial Celebration that may impact the watershed with increased usage and access.

Accomplishments:
Watershed members have compiled organizational Operating Guidelines, prepared an Action Plan, appointed an Executive Board of Directors, elected a Chair, and formed a Technical Advisory Committee (TAC). A listing of these representatives is included in the additional documentation. Clerical duties and other activities normally handled by a coordinator have been divided among the involved conservation districts. Due to the size and diversity of the Watershed, the area has been divided into 4 separate regions (each with an elected Chairperson) to better address resource concerns on a more local level. Priority resource issues of stream bank stabilization, rangeland health, irrigation water management, noxious weeds, salinity and oil and gas production/water quality have been identified and members have begun to address these issues with reclamation/restoration projects funded by a combination of agency cost-share programs, grants and individual resources. Grant funds were secured to compile and evaluate existing data to establish baseline conditions and focus efforts in subsequent projects, and to select sites and compile a monitoring plan for future data collection and watershed characterization. Several grant applications have been submitted to provide funding for demonstration, monitoring and educational projects.

Future Plans:
Future plans include hiring a technical coordinator to assist with grant writing and project coordination. Several educational forums are being planned, as well as implementing a

long-term water monitoring program. Members are committed to pursuing additional restoration/reclamation projects. The MRW will also be developing a Total Maximum Dailey Load (TMDL) plan (due in 2006) for the main stem of the Marias and the tributaries below the confluence of Two Medicine and Cut Bank Creek. The group would also like to promote greater use of the water resource by focusing attention and support to the issues of increased recreation and irrigation efforts on Lake Elwell. **The new hydroelectric plant that is under construction on Tiber Dam is also another unique aspect of the watershed** The conservation districts will be compiling a newsletter that will be mailed to all individuals/organizations/agencies that have indicated interest in this watershed effort. At present, that list includes over 300 entities.

Biggest Challenge:

The biggest challenge for the watershed group has been maintaining a high interest level while completing the "mundane" organizational details. With this task completed, project/program funding has become the next challenge the membership will address.

Contact:

Marlene Moon
Liberty County Conservation District
PO Box 669
Chester, MT 59522
Phone: 406-759-5778, ext. 102
Email: marlene-moon@mt.nacdnet.org

Milk River International Alliance
Blaine County

Description:
The Milk River Basin covers approximately 22,232 square miles in northern Montana and the southern portions of Alberta and Saskatchewan, Canada. From the headwaters in Glacier National Park, the Milk River flows over 700 miles to its confluence with the Missouri River below Fort Peck Reservoir. In addition to containing portions of seven Montana counties and two Canadian provinces, the basin includes the Rocky Boy and Fort Belknap Reservations and portions of the Blackfeet and Fort Peck Reservations.

The U.S. portion of the basin covers approximately 14,450 square miles (65% of the basin) in Glacier, Toole, Liberty, Hill, Blaine, Phillips, and Valley Counties. The population of the basin is approximately 38,000, (1998 data for U.S. portion) the majority located in or near the communities of Havre, Chinook, Malta, and Glasgow. Land ownership (U.S. portion) is divided between private (61%), Bureau of Land Management (12%), Native American (10%), state lands (7%), and local government, National Park Service, U.S. Fish & Wildlife Service and other (10%).<p>
Land use in the basin is dominated by range, dry land agriculture and irrigated agriculture. The vast majority of irrigated cropland (110,306 acres) is found on the mainstem of the Milk River between Fresno Reservoir and the confluence with the Missouri River below Fort Peck Reservoir. There are approximately 670 farms/ranches along this stretch of the river growing alfalfa, hay, and small grains.

Why was it Formed:
The idea of creating a locally led watershed initiative evolved from the "Milk River: International Lifeline of the Hi-Line" workshop held in Havre, Montana, on January 30, 1999. The workshop, which was attended by over 200 U.S., Canadian, and Native American citizens, explored many of the complex water management issues which residents of the basin face as they approach the 21st Century.

One theme flowed through the entire workshop — collaboration and coordination is the key for improving water management in the basin. After the workshop, over a dozen individuals expressed interest in exploring the idea of creating a locally led initiative for the basin. Capitalizing on this enthusiasm, the first organizational meeting of the Alliance was held in Malta on March 24, 1999.

The Milk River International Alliance (Alliance) is led by local citizens who are working together to understand the Milk River watershed and to become a positive voice for the effective management and enhancement of the resources we all depend on. Through the Alliance, basin residents and natural resource managers are working together to craft local solutions to natural resource issues within the basin. The term "International" highlights the importance of the basin to citizens on both sides of the international boundary. The Alliance is open to all U.S., Canadian, and Native American basin residents who wish to participate.

The Alliances mission is to foster collaborative solutions to natural resource issues to improve the quality of life in the Milk River Basin.

Accomplishments:
In July 2000, the Alliance received Clean Water Act Section 139 funds from the MT DEQ to begin a natural resource assessment in the basin that will focus on water quality, water quantity, weeds, and riparian health. The first goal of the assessment will be to identify the location and magnitude of resource impairments. Secondly, the assessment will allow local residents and natural resource managers to prioritize resource concerns and begin developing alternatives to address concerns. A major component of the assessment, scheduled to take place in June 2003, will be a low-level helicopter survey of approximately 445 miles of the Milk River mainstem starting at Fresno Reservoir and ending at the confluence with the Missouri River.

The Alliance has been very successful in organizing educational tours in the watershed. In August of 2000, eighty people participated in a two-day tour to the headwaters of the Milk River and the diversion works that brings water from the St. Mary's basin over to the Milk River Basin. In July 2001, the Alliance took a dozen irrigators from the US portion of the basin up to view several irrigation projects in Saskatchewan. This cross border exchange was highly successful and we hope to plan another one in the future. In September of 2002, the Alliance organized a two-day tour of the irrigation projects and infrastructure along the mainstem of the river in heart of the basin.

The Alliance also sponsored a series of informational meetings on the Federal Reserved Water Rights Compact between the State of Montana and the Gros Ventre and Assiniboine Tribes of the Ft Belknap Reservation. Additional projects are being planned and implemented to develop information and education programs to raise the level of watershed awareness among residents in the basin.

Our watershed partners include:

- Hill, Blaine, Phillips, and Valley County Conservation Districts
- Harlem, Malta, Alfalfa Valley, Ft Belknap, Zurich, Paradise Valley, and Glasgow Irrigation Districts
- Milk River Joint Board of Control
- Gros Ventre and Assiniboine Tribes of the Ft Belknap Reservation
- Sask Water
- Alberta Environment
- Natural Resources Conservation Service
- Bureau of Reclamation
- Bureau of Land Management
- US Fish and Wildlife Service
- Montana Department of Natural Resources and Conservation
- Montana Department of Environmental Quality
- Many landowners and basin residents

Future Plans:
The Watershed Assessment is a huge undertaking and will in all likelihood dominate the Alliance's agenda for the next few years. We plan to do more basin tours and are looking into the possibility of holding another joint tour with the folks from Canada. We are also looking at doing a stream bank stabilization project that demonstrates techniques for addressing loss of agricultural land and sediment loading in the Milk River.

Biggest Challenge:
The sheer size of the basin has been a major challenge to overcome. How do you get people together that are sparsely scattered over 22,000 square miles? The logistics are mind-boggling and take up a lot of time and resources.

Contact:
Jim Thompson
Watershed Coordinator
Milk River International Alliance
PO Box 303, Fort Peck, MT 59223-0303
(406) 367-5125
jimthomp@nemontel.net

Missouri River Conservation Districts Council

Description:
The Missouri River Conservation Districts Council is that and not exactly a watershed as they are typically and traditionally described. Our group encompasses the the Missouri River Corridor from the headwaters Gallatin County to the North Dakota border in Richland County. Our chairman is Buzz Mattelin of Roosevelt County; our vice chair is Paul Gies of Fergus County and the volunteer coordinator is Gayla Wortman, administrator for the Cascade County Conservation District.The Corridor is divided into three sub groups, or river reaches and each reach has a chairman.

Why was it Formed:
To assist conservation districts and their landowners with resource decisions along the Missouri River.

Accomplishments:
Organization and ground rules. Quarterly newsletter. A grant secured for operating funds; a second grant secured to conduct a data gap analysis; a third grand proposal submitted for public realations and outreach.

Future Plans:
Accelerate outreach campaign and attend the Missouri River coalition meeting. Put up a web page or link with the MACD. Conduct Council meetings in each of the seperate river reaches. Contract with an individual or firm to conduct the data gap analysis.

Biggest Challenge:
Convincing all the member districts to participate. Funding for a coordinator.

Contact:
Gayla Wortman
Coordinator
Missouri River Conservation Districts Council
c/o Cascade County Conservation District, 12 Third Street NW, Suite 300, Great Falls, MT 59404
(406) 727 3603
cccd@mcn.net

Musselshell

Description: The Musselshell River is a tributary of the Upper Missouri River. Current active local watershed projects occur between Barber, east of Harlowton, to north of Mosby. An ongoing physical assessment of the Musselshell main stem, addresses the riparian corridor beginning at the confluence of the North and South Forks of the Musselshell and ends where Flatwillow Creek flows into the Musselshell. The town of Roundup, supporting a population near 2000, is almost mid center in the watershed.

Why was it Formed:
The lower Careless Creek project arose to address landowner concerns with accelerated stream bank erosion and sedimentation caused by high summer irrigation flows delivered out of Deadman's Reservoir. The Painted Robe project is focusing on saline recharge and related water toxicity and riparian and upland health. Lower Musselshell, below Flatwillow Creek, has focused on improving irrigation management and stream bank health.

Accomplishments:
Careless Creek has reduced damaging flows through cooperative agreements and restored significant sections of eroded banks. A Water Quality Restoration Plan (TMDL) was completed in fall 2001. Painted Robe has developed many solar powered off stream water facilities, partnered with the Montana Salinity Control Association in establishing saline recharge monitoring wells, and has initiated landowner conservation plans. Lower Mussleshell has initiated improved irrigation facilities and management and has developed controlled grazing programs along the river corridor. A Water Quality Restoration Plan was completed in 2002. The Musselshell Review, an award winning quarterly newsletter serves outreach needs for much of the watershed.

Future Plans:
To complete an ongoing assessment of the Musselshell main stem involving Petroleum, Lower Musselshell, and the Upper Musselshell Conservation Districts. To explore developing a larger partnership among the different local efforts addressing stream bank health, flow management, weed management (Salt Cedar, knapweed, and spurge), long term monitoring, and education outreach to the public and local schools.

Biggest Challenge:
Ensuring that all affected parties understand what is being done and why, and have a clear opportunity to shape the planning and implementation of the agreed projects.

Contact:
Alice Wolff
District Administrator, Co-coordinator
Lower Musselshell Conservation District
109 Railroad Ave EastRoundup, MT 59072
406-323-2103

Nine Mile Watershed Group

% Bob Brugh
25685 Nine Mile Road
Huson, MT 59846
(406) 626-4687
Fac 406-626-4673

Status: Currently in the first Years work of the TMDL data accumulation and initial report preparation.
Consultant: Land & Water Consulting Inc.
1120 Cedar Street
Missoula, MT 59802
Contact: Paul Callahan 721-0354

Redwater River

Description:
The Redwater River is located in eastern Montana. It is a fourth-order tributary of the Missouri River located in HUIC 10060002. The river begins in Prairie County, flows north into McCone County, then northeasterly past the communities of Brockway and Circle and about 20 miles east of Vida. The Redwater River merges with the Missouri River near Poplar. Total channel length is estimated at 168.8 miles. Total length of the principal valley is about 110 miles. Area of the watershed is about 1.35 million acres, or 2,100 square miles.

Why was it Formed:
This watershed effort began in response to the 303(d) list.

Accomplishments:
We have done assessment on the Redwater River. In 1999 the Redwater River was taken off of the 303(d) list.

Future Plans:
*To continue monitoring our streams *to take assessment of the rest of our impaired streams *to get them off of the 303(d) list *to keep them off.

Biggest Challenge:
Getting the landowners and other people involved

Contact:
Jeanne Kirkegard
District Administrator
McCone Conservation District
Box 276, Circle, MT 59215
(406)485-2744

Ruby Valley

Describe your Watershed:
The Ruby Valley is located in Southwest Montana and includes the towns of Sheridan, Twin Bridges, Alder and Virginia City, along with some smaller communities. The Ruby River is the major river in the watershed and there are numerous smaller streams and creeks in the 620,000-acre watershed. Major mountains in the watershed include the Tobacco Root Mountains, Ruby Mountains, Gravelly Range, and Snowcrest Mountains. Land use in the watershed is currently rural-agricultural with some tourism associated with Virginia City and minor mining and logging operations. Local citizens want to maintain the open space, high quality natural resources, and the agricultural heritage that has dominated the valley. Also, historic mining impacts are part of the local restoration goals.

Why was a watershed effort begun?
This watershed effort began in mid-1994 after the much publicized fish kill associated with the release of water from the Ruby Dam containing an excessive amount of sediment, due mostly to the low water level in the dam at the time. The Governor appointed the Ruby River Task Force to deal with the fish kill and the associated sediment in the Ruby Dam. The Task Force had no authority to implement any of its recommendations to the governor and thus the Ruby Watershed Council was created by the Ruby Valley Conservation District. The charge of the Ruby Watershed Council is the general watershed health of the Ruby Valley. The Council looks at the entire watershed before bringing a program in place. Our mission is to: "Assist Family Agricultural Operations by Improving Production, and Enhancing and Protecting Natural Resources."

What has been accomplished thus far?
The first program implemented by the Ruby Watershed Council and the Ruby Valley Conservation District was the construction of needed diversion structures, headgates and measuring devices along the Ruby River. We have in addition, completed the first phase of a Groundwater Study and will soon have the second phase completed. A 43-mile cattle, buffalo and wildlife watering pipeline was completed in 2003. Several resource inventories have been completed on several of the larger ranches in the watershed with Conservation Plans being implemented, feedlots being moved off-stream and range/pasture management being implemented.

What are your future plans?
We will continue on the same tact in the future, looking for any and all projects that will benefit the Watershed. Our biggest challenge is now and has always been convincing the residents they need to participate, it's their valley and they need to help protect it.

Contact Information

The Ruby Watershed Council can be reached through the Ruby Valley Conservation District, P. O. Box 295, Sheridan, MT 59749, phone 406-842-5741, fax 406-842-5914, email rvcd@3rivers.net

Our current contract watershed coordinator is Scott Payne with Kirk Environmental, LLC, P. O. Box 636, Sheridan, MT 59749, phone 406-842-7224

Submitted by:
Shirley Galovic
District Administrator
Ruby Valley Conservation District

Sage Creek Watershed

- Describe your watershed.

The Sage Creek Watershed encompasses approximately 625,000 acres in northern Liberty and Hill counties in north central Montana with about 138,800 of those acres forming the lower portion below US Highway 2. The headwaters of the Sage Creek Watershed are found in the Sweet Grass Hills in northern Liberty County. Two rural water lines serve approximately 75 households and one Hutterite Colony. Sage Creek and its tributaries (Little Sage Creek, O'Brien Coulee and Four Mile Creek) flow into Big Sandy Creek, which in turn empties into the Milk River just above the water treatment plant for the City of Havre, Montana. The topography of the western upper portion of the Sage Creek Watershed is mountainous (6,958 feet above sea level). To the east, below an elevation of about 5,000 ft., the terrain is hummocky and gently rolling, characteristic of the glaciated northern Great Plains. The soils on the undulating glacial uplands are generally deep and range from well-drained sandy texture to clay loam and heavy clay.

- Why was a watershed effort begun?

The Sage Creek Watershed Alliance (SCWA) was formed as a result of residents' increasing alarm over the quality of the water in Sage Creek. After a rapid runoff in the spring of 1996, contamination rendered the water in at least one large reservoir toxic for livestock and contributed to difficulty in maintaining safe drinking water standards for the City of Havre water supply. The primary environmental, agricultural and community concern of the Alliance is salinization of cultivated cropland, natural drainageways and surface waters as a result of excess shallow saline groundwater moving to the surface.

- What has been accomplished so far?

A complete ground/surface water interaction investigation has been conducted by the Montana Bureau of Mines and Geology, beginning with MBMG 351, an open file report entitled Ground-Water Evaluation of the East Butte of the Sweet Grass Hills, North-Central Montana, which will be incorporated into a published document, Water resources and salt loads in an intermittent Prairie Stream: Sage Creek Hydrogeologic Basin, Northern Montana, (in review). An aerial assessment was conducted by DNRC/NRCS staff and the subsequent mapping and report provides a planning tool for the SCWA board to address the areas of concern that were defined by watershed members—saline seep on cropland, salinity in drainage ways, shallow groundwater contamination (wells)/possible high nitrate levels, sedimentation, noxious weeds, livestock facility/ag waste, seismic activities affection groundwater and others. An Area Wide Conservation Plan was compiled that details such information as physical characteristics, demographic information, land use, effects on resources (water, soil, plants, animals, humans), clients objectives, resource inventory, alternatives offered, as well as maps and other documentation. Several 319 grant proposals and a DNRC Renewable Resource grant have enabled the SCWA to conduct their investigations and implement restoration/reclamation activities. Producers have committed over 860 acres to perennial vegetation (mainly various species of alfalfa and salt tolerant grasses) under 5-year contracts with cost-share provided by grant funds. Producers provided over $108,000 in-kind match with seeding, weed control and maintenance costs. Over 430 monitoring wells have been installed by Montana Salinity Control Association (MSCA) to *map ground water flow and pinpoint recharge areas. These wells are monitored seasonally and the data evaluated to track ground water trends associated with surface land management. The ground water information qualified specific land for technical and financial assistance if producers choose to participate. The SCWA Executive Board still meets regularly to discuss projects and future goals and objectives. The Montana Dept. of Fish, Wildlife and Parks prepared a fishery inventory, Big Sage Creek Aquatic Investigations.*

- What are your plans for the future?

The Sage Creek Alliance has been actively involved in the TMDL plan developed using information from the MBMG and MSCA ground water work. SCWA will continue to monitor the TMDL plan as MDEQ and EPA administer it. SCWA will work with the private, state and federal entities to attract funds and programs to improve individual landowners' productivity by increasing water-use efficiency and reducing ground water recharge. SCWA sponsors an annual meeting to update producers on new programs and issues, and brings in speakers on relevant topics.

- What has been your biggest challenge?

Drought and poor agricultural economics have been the biggest limiting factors in allowing producers to implement the voluntary changes.

- How can others get in touch with you and the group?

Marlene Moon, SCWA Coordinator
Liberty County Conservation District
PO Box 669
Chester, MT 59522
Phone: 406-759-5778, ext. 102
Email: marlene-moon@mt.nacdnet.org

Snowline Grazing Association

Description:
The watershed of Snowline Grazing Association consists of Junction Creek an dthe numerous creeks that feed into it. Junctions Creek itself drains into the Red Rock River at Lima, MT. The watershed includes, Dutch Hollow, Croohed Run, Sawmill, Shineberger, Middle, Poison, Beaver and its tributaries and the approximately 58,000 acres they drain.

Why was it Formed:
This watershed effort, a coordinated resource management plan (CRMP) was begun to manage the resource across ownership boundaries and include various interested parties in the process. Improved communication among the interest was also hoped for.

Accomplishments:
Among the things accomplished have been

1.) Improvement in irrigation systems
2.) Fencing to improve cattle distribution and forage utilization
3.) A Project funded by U.S. Fish and Wildlife Service to restore a section of Shineberger Creek
4.) Establishing a baseline resource inventory to compare to through future monitoring
5.) Provide rest in more pastures
6.) Improve and increase water developments for stock watering

Future Plans:
We have been in a 5-year drought so we would like to be able to continue to maintain a valuable livestock operation and maintain or improve current conditions of the watershed. We also hope to continue with the projects and monitoring as outlined in the CRMP timeline. We are also hoping to complete the CRMP document in the next few months.

Biggest Challenge:
The biggest challenge has been to establish communications and trust among the various groups involved.

Contact:
Snowline Grazing Association
PO Box 1281 Dillion, MT 59725

Gary Nelson
5559 HWY 41 Silver Star, MT 59751
406-287-5554

Southern Crazy Mountain Watershed

Description:
The Southern Crazy Mountain Watershed lies in the northern portion of Park County in south central Montana. The watershed covers an area of approximately 30,000 acres. Private land ownership in the watershed constitutes 80.8 percent of the area, while the U.S. Forest Service holds 15.8 percent of the area. The rest of the ownership is State Lands 2.5 percent, BLM 0.4 percent, Water 0.1 percent and other 0.4 percent. Land use in the watershed is primarily agricultural. Rangeland makes up the majority of the landuse with 58.7 percent. Forest land makes up 20.7 percent, Pasture 11.2 percent, Hay 6.7 percent, Crop 2.4 percent, Rural Transportation 0.2 percent, and Water 0.1 percent.

Warm summers and cold winters characterize the climate of the watershed. Precipitation, and to a lesser extent, temperature in the area are highly dependent on elevation, which varies over the watershed from 4,375 feet at the Yellowstone River to nearly 11,000 feet in the Crazy Mountains. Precipitation records at Wilsall from the period of 1957 through 1998 show the mean average precipitation at 20.74 inches per year. For the watershed in general, the precipitation range overall would be approximately in the 13-inch to 15-inch inch per year category. The Bridger Mountains in the west with elevations around 9,000 feet have an annual precipitation of over 50 inches, while the Crazy Mountains in the east average around 60 inches of annual precipitation. The mean average temperature at Wilsall for this same period is 40.9 degrees Fahrenheit. The warmest month is July with a mean average temperature of 62.4 degrees Fahrenheit, while the coldest month is January with a mean average temperature of 21.7 degrees Fahrenheit. The average 32 degrees Fahrenheit frost-free period is from May 22 to September 18; a 118-day period. About 68 percent of the annual precipitation falls in the April through September period, while approximately 32 percent of the annual precipitation falls in the months of May and June for the entire watershed.

Why was it Formed:
The Southern Crazy Mountain Watershed group formed in January 2001 because of noxious weed issues. Within the watershed boundaries there is over 10,000 acres of leafy spurge.

The Southern Crazy Mountain Watershed group is a collection of landowners and citizens of the community with a common goal of protecting and improving the land, water, and resources of the watershed.

Accomplishments:
- Mission Statement, goals, objectives, action items, and By-Laws;
- Completed two off-stream water projects (2002);
- Treated 11,300 acres of leafy spurge (chemical—Tordon, Opti-Amine, and Plateau) (2001-2002);
- Treated 45 acres of spotted knapweed (chemical--Tordon) (2001);
- Released approximately 594,000 flea beetles, both brown and black (leafy spurge control) (2001-2002);

- Grazing Sheep on approximately 6,000 acres of leafy spurge (2001-2002);
- Purchased truck sprayer (for chemical use on leafy spurge) (2001)

Future Plans:
Current Projects:

- Stream Assessment of Rock Creek;
- Range Monitoring Workshop and established monitoring sites;
- Continue to control the leafy spurge infestation through integrated efforts (chemical, biological, sheep, goats).

Future Projects:

- Continue to control the leafy spurge infestation;
- Develop a water budget for Rock Creek;
- Three bank restoration projects.

Biggest Challenge:
The Southern Crazy Mountain Watershed group's biggest challenge has been encouraging the active involvement of all landowners located in the watershed boundaries. The watershed group has a large number of small acreage landowners.

Contact:
Amy Miller
Coordinator
Park Conservation District
(406)222-2899

Sun River Watershed
Cascade County

Description: The Sun River Watershed (SRW) is in west-central Montana covering 1.4 million acres of diversified landscape, including Forest Service wilderness, wildlife winter range, rangeland, irrigated cropland and several small communities. The river flows for approximately 110 miles, contributing its water to various uses until it empties into the Missouri River at the historic city of Great Falls.

Ownership and land patterns are (in acres):
US Forest Service - 484,352, MT State Lands - 98,560, US BoR - 17,920, US BLM - 5,120, US F&W - 160, GID irrigated area - 83,000, Broken O irrigated area - 17,000, FSID irrigated area - 10,000, Sun River Ditch Company irrigated area - 3,200, Rocky Reef irrigated area - 500, Urban - 3,000, Private property - 799,048

Why was it Formed:
Over the years, controversy was a way of life in the basin, with battle lines drawn on the issues of water rights, erosion causes, water for fisheries and recreation, and water quality conditions. The tug-of-war all changed in 1994 when the Muddy Creek Task Force organized the fighting status-quo into a team approach to resolve one of the worst non-point source pollution problems in Montana. The group discovered innovative ways to tackle a problem that had stalemated for more than 30 years. From the beginning they agreed, once the project had a good start they would enlarge the boundaries and participation to encompasses the entire Sun River watershed. In 1996, with the demonstration of the Muddy Creek success story, key leaders in the basin felt it was possible and time to attack the bigger area.

Accomplishments:
1) People working together for several common goals
2) Significant reduction of erosion on Muddy Creek - 75%
3) Agrimet water management tool in Sun River watershed
4) Several additional erosion control projects on Sun River and tribs
5) Irrigation canal lining
6) Improved water quantity monitoring

The group has taken a short and long term attitude of solving the many problems facing players. Each proposed solution to address the issues has been accomplished through teamwork. A work plan was established early on to help set the priorities and needs for the players to work from. The key task has been prioritizing the key erosion problem sites and finding the best means to reduce the erosion. They have established processes to help improve the overall water quality and quantity by working with the irrigators and landowners. The agencies have also assisted people in finding ways to improve range, fisheries while improving their bottom line - income. The ideas were implemented where there was sufficient public support and an achievable outcome to support the groups main goals. The group started and continues with Muddy Creek. They are also working on many miles of the Sun River and several tributaries. For the weed problem a monitoring plan has been started with chemical and biological control taking place from the top to the bottom of the watershed.

To make sure all of this effort is working water quality and quantity progress is monitored by USGS gauging stations, water quality monitoring sites, photo points, and public opinion which all have shown positive trends. Fish, Wildlife & Parks is sampling fish numbers to document change over time. Such achievements witnessed include:
1) stabilizing 20 miles of a 40-mile stream considered the worst non-point source problem in Montana, reducing the sediment load by 75% (from 200,000 tons annually to 50,000 tons),
2) stabilizing 4 miles of key fisheries and spawning habitat on tributaries of the Sun River, designs on an additional 30 miles of to stabilize the Sun River and other tributaries,
3) range management on 50,000 acres,
4) noxious weed control through the distribution of thousands of bugs that is reducing chemical use,
5) water management and irrigation efficiency through Agrimet (irrigation weather stations) to reduce water use,
6) lining 800 feet of irrigation canals,
7) automating several canal gates to improve irrigation efficiency,
8) EQIP priority area to help meet local needs, and many more projects unable to define in a few words.

Future Plans:
To continue to work on natural resource concerns that the watershed group prioritizes.

Biggest Challenge:
Funding and drought.

Additional Comments:
The Montana Department of Environmental Quality (DEQ) released the draft Sun River Water Quality Restoration Plan. The document presents all necessary total maximum daily loads (TMDL) for sediment, salinity and nutrients in the Sun TMDL Planning Area. The Sun River Watershed is found in Cascade, Teton, and Lewis and Clark counties west of Great Falls, Montana.

Members of the public are invited to an open house to ask questions and leave comments. The open house will be held on Wednesday, October 22, 2003 from 5:00 to 7:00 pm at the Great Falls Public Library at 301 South Avenue North. The public is encouraged to stop by at a time convenient to them to speak with a water quality specialist about their questions and comments. No formal presentation is planned. <a
http://www.deq.state.mt.us/ppa/mdm/TMDL/tmdlPublicComments.asp

Contact:
Alan Rollo
Sun River Watershed Group
808 52nd St So, Great Falls, MT 59405
(406) 727-4437
arollo@mcn.net

Swan Ecosystem Center
Sub Major Basin: Flathead
Flathead County

Description:
The Upper Swan Valley is at the headwaters of the Swan River. It is a tributary of the Flathead River system. The Swan River begins in the Mission Mountains Wilderness and flows north into Flathead Lake at Bigfork, Montana. The Upper Swan Valley is about 30 miles long and 15 miles wide, between the Mission Mountains Divide and the Swan Range Divide. The Mission Mountains cast a rain shadow making upper valley somewhat drier than the lower valley. The area is also distinct from a social perspective. The communities of Condon and Salmon Prairie are centered here, with about 900 residents. The economy has traditionally been timber-based. People share the landscape with grizzly bears, bull trout, the delicate rare plant Howellia aquatilis, and other threatened and endangered species. Nearly every plant and animal species indigenous to the U.S. Northern Rockies is found in this forested valley.

Why was it Formed:
People here care deeply about the land. They want to protect the environment and continue making a living. Residents have intimate knowledge of the area ecosystem, based on experience working, hunting, fishing, berry picking, etc. Their experience-based knowledge is useful to the Forest Service, DNRC, and private landowners charged with caring for the land. Residents want to participate effectively in land management decision-making, and this watershed effort makes it possible.

Accomplishments:
- Pondersosa Pine Site demonstration area;
- Firewise Forest demonstration area;
- Everchanging Forest Visitor Center and Trail;
- Stream monitoring by volunteers;
- Numerous educational programs for people of all ages;
- Forest stewardship educational trunk for 5th-8th-grade students;
- Backcountry ranger programs in the Mission Mountains Wilderness and the Swan Range;
- Monitoring wetlands for Howellia aquatilis;
- The Upper Swan Valley Landscape Assessment;
- Oral histories of how the landscape has been over time;
- Cooperative planning among all stakeholders to protect Plum Creek land up for sale.

Future Plans:
- Continue programs listed above;
- Ensure that residents are informed and are participating effectively in land management;
- Protect as much Plum Creek Timber Company land as possible - Maintain land in the timber base, protect wildlife habitat and corridors, maintain ecosystem integrity, maintain opportunities for recreation.

Biggest Challenge:

http://www.swanecosystemcenter.com

Contact:
Anne Dahl
Swan Ecosystem Center
6887 Highway 83, Condon, MT 59826
(406)754-3137
swanec@blackfoot.net

Swift Creek Coalition
Sub Major Basin – Flathead
Flathead County

Description:
Swift Creek, a major tributary to Whitefish Lake, is located in Flathead County, in northwestern Montana, and is listed as a water quality limited water body by Montana DEQ. The drainage covers approximately 49,475 acres. Swift Creek is a source of water for the City of Whitefish.

Why was it Formed:
The Swift Creek Coalition has been in operation since January 2000, and is sponsored by the Whitefish County Water and Sewer District. The Coalition was started in order to investigate concerns about the potential water quality impacts that Swift Creek might be having on Whitefish Lake. Severe high bank erosion problems were thought to be a major impact. The Swift Creek Coalition's mission is to maintain a viable, healthy, and sustainable watershed for the benefit of all users through cooperation with landowners, and the promotion of public education.

Accomplishments:
The Flathead Conservation District obtained a Watershed Planning Assistance Grant in the summer of 2000 to fund the start-up of the Coalition. There have been considerable amounts of scientific data collected on the drainage over the years by various entities, however, a comprehensive watershed assessment has never been performed and the existing data has never been assembled and reviewed until recently when the Swift Creek Coalition contracted a professional hydrological consulting firm to perform a review of all existing data. This data review is currently being funded by a 319 grant. In related water quality survey work, the Whitefish County Water and Sewer District has received a DNRC Renewable Resource Program Grant to fund a study of Whitefish Lake (also a 303(d) listed water body). This study is expected to be completed in the spring of 2003.

Future Plans:
The Coalition has requested additional 319 grant funding for addressing data gaps identified by the existing data review. The Coalition is committed to developing a comprehensive watershed plan for the drainage which will maintain, or where needed, restore the chemical, biological and physical integrity of the Swift Creek drainage by reducing non-point pollution, stabilizing stream banks, and improving stream habitat and riparian vegetation in order to restore native fish populations and improve water quality in order to remove listed water bodies from Montana's 303(d) list.

Biggest Challenge:
All involved would likely agree that obtaining adequate funding to implement restoration projects and provide for administration and management of the watershed councils is likely the biggest challenge.

Contact:
Mike Miller
Coordinator
Swift Creek Coalition
548 Elk Creek Road, Heron, MT 59844
(406)847-5560
mmiller@blackfoot.net

Teton River Watershed Group

Description:
Teton River Watershed (see Appendix A) is located east of the continental divide and south of Glacier National Park. It covers an area of 1,308 square miles (837,000 acres), with approximately 289 square miles (185,000 acres) in western Chouteau County; 1,000 square miles (640,000 acres) in northern Teton County and 19 square miles (12,000 acres) in southern Pondera County (approximate figures only). The Teton River starts in the Rocky Mountain Front and meanders out of the mountains through rolling grass covered foothills and farmland to its confluence with the Marias River at Loma which flows on to the Missouri River. As it makes this trip it also passes through the community of Choteau. The major tributaries of the Teton River are Muddy Creek, Deep Creek and McDonald Creek. The basin is about 196 miles long and 1-2 miles wide.

Ownership and land patterns are (estimates only)(in acres): US Forest Service - 112,640; MT State Lands - 75,520; US BLM - 14,720; Urban - 8,370; Private property - 625,750. Rangeland - 340,000ac, 43%; Cropland - 296,300ac, 35.5%; Forested - 96,000ac, 11%; Hayland/pastureland - 100,000ac, 12%; Farmsteads - 1,700ac, .2%; Urban - 1,700ac, .2%; Transportation - 1,300ac, .15%.

Why was it Formed:
Formed in 1994, the Teton River Watershed Group's key issue in the beginning was to work on all natural resource issues but primarily weeds. Other important issues were water quality and water quantity.

Accomplishments:
<br>1) an aerial stream assessment of the entire Teton River, Muddy Creek and Deep Creek,
2)on-the-ground assessment of key problem reaches on these water bodies,
3)the initiation of a ground/surface water quality and quantity study of the Muddy Creek/Burton Bench watershed to identify cause and effects of problems in the area,
4) a thorough stream assessment by Watershed Consulting of the upper Teton River to identify and prioritize irrigation diversion improvement needs,
5) installed two USGS gauging stations to help improve the monitoring program,
6) established a volunteer water quality monitoring program testing at 10 sites,
7) established an aggressive noxious weed control program utilizing biological and chemical controls which are improving riparian and upland conditions,
8) conducted 12 public meetings on local efforts and needs,
9) working with Montana Salinity Control Association to identify key saline seep sites on the Teton Ridge, the major water quality problem within the basin,
10) installed stream stabilization at five sites to affect sevearl miles of bank,
11) progress with two irrigation diversion improvement projects,
12) improved 40 miles of riparian corridor,
13) started the TMDL planning process,
14) quarterly newsletter written by the local conservation districts to keep people informed, and

15) pulled together a diverse group of people to help resolve the problems as a team.

Future Plans:
1) continue to actively pursue noxious weed control as a team from many angles
2) stream work where necessary
3) riparian improvements
4) water quality and quantity monitoring to ensure decisions are made from facts
5) be a team to discuss not cuss issues

Biggest Challenge:
The biggest challenge has been funding to meet all desired goals and lack of water (too many drought years in a row).

Contact:
Alan Rollo
Coordinator
Teton River Watershed Group (TRWG)
808 52nd St So, Great Falls, MT 59405
(406)727-4437
arollo@mcn.net

Tri State Water Quality Council

- **Describe your watershed.**

The Clark Fork-Pend Oreille watershed spans 26,000 square miles across three states. The watershed includes the Clark Fork River basin in western Montana and northern Idaho, Lake Pend Oreille in northern Idaho, and the Pend Oreille River basin in northern Idaho and northeastern Washington. About 80% of the watershed is in Montana.

- **Why was a watershed effort begun?**

Citizen concerns about increased algae and aquatic weeds ("slime on the rocks"!) resulted in language in the Clean Water Act Reauthorization (1987) that directed EPA to study the 3-state watershed. The study resulted in a Report to Congress about nutrient pollution across the basin and included a Clark Fork-Pend Oreille Basin Management Plan. The plan describes management options to reduce nutrient pollution in the watershed and the Tri-State Water Quality Council was created to implement those options in order to reduce nutrients and algae.

- **What has been accomplished so far?**

Since 1993 we have: Developed an agreement (Voluntary Nutrient Reduction Program, VNRP) for significant pollution reduction measures for the Clark Fork River in Montana, through a collaborative process that included all major point source dischargers. Guided implementation of the VNRP measures. Negotiated an agreement between the states of Montana and Idaho that sets a nutrient loading target at the Montana/Idaho boundary to protect the water quality of Lake Pend Oreille. Coordinated the development of a nearshore TMDL for Lake Pend Oreille. Established a three-state water quality monitoring program that detects long term water quality trends across the watershed and gauges the effectiveness of water quality clean-up solutions. Supported the State of Montana in setting numeric nutrient standards for the Clark Fork River. Instituted non-point source projects with dairy farmers in the Bitterroot River valley, and landowners in Three-Mile/Ambrose Creeks (Bitterroot watershed) and the Pack River (Lake Pend Oreille watershed.) Created Water Festivals held annually for 5th and 6th grade students in Idaho, Washington and Montana. Built partnerships with groups and agencies across the watershed for achieving water quality goals.

- **What are your plans for the future?**

Over the next year we plan to: Complete a TMDL implementation plan for Lake Pend Oreille. Begin work on a TMDL for the Pend Oreille River and negotiate an agreement between the states of Idaho and Washington to protect the river. Finalize a TMDL for the Bitterroot River headwaters. Develop and implement an education program for the watershed's public at large.

- **What has been your biggest challenge?**

Funding, funding, funding!

- **How can others get in touch with you and the group?**

Ruth Watkins, Program Manager, Tri-State Water Quality Council, 307 No. 2nd Ave, Sandpoint, ID 83864. 208-265-9092. Email: tristatecouncil@sandpoint.net. Web: www.tristatecouncil.org

Upper Clark Fork River Basin Steering Committee

Description:
The Upper Clark Fork River Basin Steering Committee represents a large portion of the Clark Fork of the Columbia drainage. This geographic area comprises the mainstem of the Clark Fork River and all tributaries above Milltown dam. This would include the watersheds of Rock Creek, Flint Creek, Big Blackfoot, and Little Blackfoot Rivers.

Other watershed initiatives, such as the Blackfoot Challenge, Flint Creek Dam Advisory Committee and Little Blackfoot Watershed Committee are nested within this area.

Why was it Formed:
The concept of a collaborative watershed based planning effort grew out of the looming conflicts that were being developed by the State of Montana's water reservation process in the Clark Fork. Parties in that reservation process were approached by nongovernmental interest in exploring a collaborative conflict resolution process. From those discussion Senate Bill 434 was introduced in the 1991 legislative session. This bill implemented a voluntarily negotiated agreement by Upper Clark Fork water users and manager.

This bill created a state recognized watershed group, Upper Clark Fork River Basin Steering Committee, whose participants represented the basin geographically and by stakeholder interest. The basin was closed temporarily to new water developments; the water reservation applications were placed in a moratorium status and directed the creation of an Upper Clark Fork Management Plan. That plan was to resolve the need for water reservations and other basin management issues. In 1994 the Steering Committee submitted the Upper Clark Fork River Basin Water Management Plan to DNRC for its adoption as a basin specific state "Water Plan Section". They also developed legislation to statutorily implement a number of those provisions.

One of the significant provisions includes the continuation of the Steering Committee. Through this process the Committee members and the stakeholders they represented found high value in the Committee as a tool to address to problems, typically water related and often policy related, that we not being otherwise addressed.

In the nearly eight years since the plans development and after 11 years of operation the Steering Committee continues to address significant basin issues.

Accomplishments:
Through the Management Plan and subsequent legislation nine focus areas were acted on. The most significant were the permanent closure of the basin to new surface water developments. This protected the value and status of existing water rights and created protection of the status quo for instream flow conditions and therefore fisheries.

The additional requirements for ground water permitting were a significant step forward. The Clark Fork Closure is the first and currently the only management area where new ground water developments are systematically evaluated for their relationship to surface water supplies. Directly or substantially connected ground water developments will not be approved.

A groundbreaking water leasing pilot program was developed. This initiative, which was later carried to a statewide application, allowed private parties to lease or convert their own water rights to instream flows.

Since the management plan the Steering Committee, as proposed has continued to work on water management activities. These have included the request for a declaratory ruling regarding water rights, water treatment and land application of waters as treatment. This ruling has is of significant statewide importance but was also critical for the Deer lodge Land application project which reduces nutrient loads into the Clark Fork River.

Steering Committee discussion on adjudication activities, water management and drought planning initiated a basin wide discussion of drought planning that focused upon meeting both "in-basin" and out of basin water demands. The potential conflict between downstream hydropower demands and upstream consumptive uses in the Clark Fork Drainage is significant. The Steering Committee has lead community discussion to raise awareness and interest in this issue. In 2001, the Steering Committee's work and meetings with the governor lead to the passage of House Bill 397, creation of the Clark Fork Basin Task Force and a mandated planning process to examine future water supplies and protection of existing uses, including hydropower.

Future Plans:
The committee continues to address ongoing water management issues. The make up of the committee and its leadership is particularly well adapted to the examination of large-scale water management and water policy issues. Drought planning and inter basin coordination remain of importance. The Steering Committee continues to be a leader on the Clark Fork Task Force process.

Examining future basin management especially in light of the ongoing general stream adjudication is an important and complex issue. While the state is committed to the adjudication process, the accuracy of the decrees and their utility of these decrees as a water administration tool remain untested. Further the state does not appear to have given much thought as to the in-state implication of this project. Although many areas of he Upper Clark Fork have stream specific decrees those have never been integrated. The Steering Committee is examining these issues and working toward a long-term strategy.

Drought planning that address instream flow, water conservation tools and fishery concerns is a concept the Committee continues to sponsor and promote. While the Blackfoot Challenge, in the Blackfoot drainage have developed an emergency drought plan. Other watersheds have not. The Steering Committee is currently hosting dialogs with basin uses to explore new effective drought management steps.

Biggest Challenge:

The issues that the Steering Committee has adopted to date have been policy issues which typically larger forms or representative government struggle with or gird lock on. Finding ways to locally accept the challenge is a significant achievement. It is truly a democratic process led by the local community and when necessary carried into traditional forms of governance. It also has been hard to have other watershed initiatives were focus upon local restoration projects understand the value of these larger visions.

Contact:
Gerald Mueller
Facilitator
Consensus Associates
440 Evans, Missoula, MT
(406) 543 –0026
gmueler@in-tch.com

Upper Shields Watershed Association

Description:
The Upper Shields Watershed lies in the northern portion of Park County in south central Montana. The watershed covers an area of 543 square miles or approximately 347,520 acres. Private land ownership in the watershed constitutes 80.8 percent of the area, while the U.S. Forest Service holds 15.8 percent of the area. The rest of the ownership is State Lands 2.5 percent, BLM 0.4 percent, Water 0.1 percent and other 0.4 percent. Land use in the watershed is primarily agricultural. Rangeland makes up the majority of the landuse with 58.7 percent. Forest land makes up 20.7 percent, Pasture 11.2 percent, Hay 6.7 percent, Crop 2.4 percent, Rural Transportation 0.2 percent, and Water 0.1 percent.

Warm summers and cold winters characterize the climate of the watershed. Precipitation, and to a lesser extent, temperature in the area are highly dependent on elevation, which varies over the watershed from 4,375 feet at the Yellowstone River to nearly 11,000 feet in the Crazy Mountains. Precipitation records at Wilsall from the period of 1957 through 1998 show the mean average precipitation at 20.74 inches per year. For the watershed in general, the precipitation range overall would be approximately in the 13-inch to 15-inch inch per year category. The Bridger Mountains in the west with elevations around 9,000 feet have an annual precipitation of over 50 inches, while the Crazy Mountains in the east average around 60 inches of annual precipitation. About 68 percent of the annual precipitation falls in the April through September period, while approximately 32 percent of the annual precipitation falls in the months of May and June for the entire watershed.

Why was it Formed:
The Upper Shields Watershed Association formed in November 1997 because of the Yellowstone Cutthroat Trout issue. In 1998, several environmental organizations petitioned the U.S. Fish and Wildlife Service to list the Yellowstone Cutthroat Trout under the Endangered Species Act (ESA). Watershed members were concerned that listing this species would influence their ranching operations. They want to preserve and enhance Yellowstone Cutthroat Trout populations throughout the Shields Watershed while maintaining flexibility in ranch management decisions. Although the Yellowstone Cutthroat Trout is a highly visible species, the Watershed members also wish to improve the habitat throughout the watershed area for other wildlife and fish species that inhabit this area.

The Upper Shields River Watershed Association is a collection of land owners and citizens of the community that share the vision that ranching, as a way of life, can and must be preserved. This group has been drawn together for the purpose of protecting and improving the land, water, and the resources of the land since these represent the very foundation of ranching.

Accomplishments:
• Mission Statement, goals, objectives, action items, and By-Laws; <br>• Watershed Plan (2001);

- General Resource Assessment (2001), Fisheries Assessments (2001), and Rapid Aerial Assessment maps (2001) Stream Assessment of Shields River (2001);
- Treated 2,800 acres of spotted knapweed (1999-2002) and 200 acres of leafy spurge (1999-2002);
- Completed four bank restoration Projects and eight off-stream water projects (1999 – 2002);
- Irrigation Water Management Report and purchased and installed AM400 Soil Moisture Data Loggers (2002);
- Developed a project ranking criteria form (2002);
- Established two water monitoring sites (2001)

Future Plans:
Current Projects:
- Collect water quality data from two established sites;
- Developing a water budget for irrigation (Big Ditch and Meyer Ditch systems);
- Three bank restoration projects, seven off-stream water project, and two diversion structure projects;
- Range Monitoring Workshop and established sites

Future Projects:
- Develop a Water Quality Restoration Plan for the Upper Shields River (2005);
- Continue to work on irrigation issues (efficiencies, water shortages, and dewatering issues)

Biggest Challenge:
The Upper Shields' biggest challenge has been getting timely engineering assistance through the Natural Resources Conservation Service.

Contact:
Amy Miller
Coordinator
Park Conservation District
5242 Highway 89 South, Livingston , MT 59047
406-222-2899
amy-miller@mt.nacdnet.org

Upper Tenmile Watershed Steering Group

Description:
The Upper Tenmile Creek Watershed lies south of US Highway 12, about seven miles west of Helena, Montana. The upper watershed is oriented south to north and extends about nine miles to the south to its headwaters on the divide it shares with Basin Creek. The downstream end of the watershed, for planning purposes, is at Highway 12 near the City of Helena's Tenmile Creek Water Treatment Plant. The watershed is 42 square miles in size and its most prominent landmark is Red Mountain, which lies in the southeast corner of the watershed and has a summit elevation of 8,150 ft. above sea level.

The Town of Rimini is rich in history precipitated by the rush of hopeful miners, following the Civil War, for gold, silver, lead, copper, and later, arsenic. Rimini once boasted a dozen or more bars and brothels, and nearly 2,000 people. Although placer mining was used in the search for gold in the early days in Upper Tenmile, underground mines were active through the 1940s and tunnels weave everywhere beneath the surface.

In the 1880s, the Helena city fathers recognized the importance of the water originating in Upper Tenmile to the growth of the Queen City and purchased the oldest water rights, instituting a prohibition on the reduction of ore within the watershed. A narrow-gauge railway was built to move ore out of the watershed for processing elsewhere. Hikers and mountain bikers use the old rail bed today for a brisk workout and to enjoy Upper Tenmile's picturesque scenery. The original schoolhouse is now the Rimini Community Center and is used for local meetings and events, including monthly watershed group meetings from April through November each year.

Why was it Formed:
Following a University of Montana graduate studies thesis on Upper Tenmile by Patricia Hettinger in 1995, results of a survey of watershed residents that had been part of the thesis prompted the Lewis and Clark County Water Quality Protection District to hold a follow-up public meeting to gauge support for a watershed group. The meeting was well-attended and a number of issues were identified in further detail for future study. The Upper Tenmile Watershed group was formed in March 1996. Subsequent meetings in 1996 were dedicated to identification of goals and objectives and the group has now held about 70 meetings since inception. The basin is home to nine of the states top fifty problematic abandoned mine sites. Upper Tenmile Watershed Steering Group members include Montana DNRC, DEQ, FWP, the USGS, USFS, EPA, City of Helena Public Works, Lewis and Clark Conservation District, county water quality protection district, Rimini Citizen's Caucus, numerous landowners, and MSU county extension service.

Accomplishments:
Hydrologic Characterizations - In 1997-98, the water quality protection district and the U.S. Geological Survey, with citizen assistance and involvement, and support of Montana DNRC, conducted a comprehensive hydrologic characterization of water quantity and quality that included locating about 40 sampling sites throughout the upper basin (See USGS Fact Sheet 059-01, August 2001: Tenmile Creek, Montana: Watershed of Many

Uses – Parrett, Kendy, & Hettinger). Data collected during this study provided a baseline for subsequent in-depth studies.

Water Quantity - The watershed group identified improvement of water quantity in Upper Tenmile Creek as its most pressing objective in 1996 shortly after the group's inception. Montana Fish, Wildlife, and Parks has studied the needs of the fishery in Upper Tenmile and determined that during the spring and summer months, a steady flow of about 3 to 4 cubic feet per second is needed for steady reproduction and stream habitat space.

Water Quality - In fall of 1999, after months of information sharing and with the watershed group's approval, Governor Racicot signed off on the listing of Upper Tenmile to the EPA's Superfund National Priorities List. The EPA cleaned-up a number of abandoned mines in 1999, removing almost 40,000 cubic yards of mine waste, and will continued the clean-up under the Superfund Program in 2000 and 2001.

Streambank Stabilization and Fishery Habitat Enhancement Project - In 1998, the group conducted a streambank stabilization and fishery habitat enhancement project, planting nearly 2000 indigenous riparian plants and shrubs on over a mile of streambank. Goals of the ongoing project are to reduce sedimentation from the Rimini Road and streambanks to the stream, create better trout habitat by improving shading to keep water temperatures cool, and to vegetate banks impacted by the Flood of 1981, which led to the proliferation of knapweed in the riparian zone.

Potable Water Supply for Rimini - Funding adequate to move forward on elements of the ROD, including development of a potable supply and delivery system for the Town of Rimini, remediation of the road in Rimini-proper from abandoned mine waste material used in sub-surface road construction, and remediation of residential yards contaminated with mine waste has been earmarked for 2003.

Noxious Weeds - The watershed group was successful in 2001 in its application for a grant from the Montana Noxious Weed Trust Fund to battle the noxious weed problem in Upper Tenmile Watershed. In 1998, noxious weed infestations of the watershed were mapped using GPS by a watershed resident volunteer, with assistance from the county and state.

Education - In 1997, a watershed group member who teaches fifth grade at Four Georgians Elementary School in Helena designed an interactive educational watershed tour for the fifth-graders at her school. The tour has become an annual event with its sixth installment taking place in the fall of 2002.

Future Plans:
Fire Protection - In 1998, the watershed group began a dialog with the Baxendale Fire Department, the most proximate volunteer fire department to the watershed. In a cooperative venture with the Forest Service, Baxendale and the watershed group are planning the construction of a fire station at the corner of the Moose Creek Road, located about halfway between the Town of Rimini and Highway 12.

Historical Preservation - The Rimini mining district is rich in local history. During the resource inventory stage of the Superfund Project, a number of historical mining sites were identified and mapped. The group would like to see these sites preserved as part of the historical record in Upper Tenmile and the EPA is fully supportive of this goal.

Streamflow - The group remains focused on the water quantity and streamflow issue in Upper Tenmile. The Forest Service manages and maintains a very popular destination for recreation in the watershed, the Moose Creek Campground and thus supports efforts to prevent chronic dewatering of the stream. The group will continue to work with the City of Helena, FWP and EPA, all of which are members, to implement the Superfund ROD and begin the task of maintaining a long-term plan of streamflow to sustain the fishery. And of course, the watershed group will stand ready to address new issues and to implement its objectives.

Biggest Challenge:

Contact:
Jesse Aber
Watershed Facilitator / Planner
DNRC WRD
P.O. Box 20160, Helena, MT 59620-1601
(406) 444-6628
jaber@mt.gov

Yellowstone River Conservation Council

Description:
The Yellowstone River Conservation District Council (YRCDC) addresses concerns along the entire main stem of the Yellowstone River. The Yellowstone River stretches over 670 miles, originating in Yellowstone National Park and draining 70,000 square miles of land before it joins the Missouri River.

Why was it Formed:
The natural and historic significance of the Yellowstone River, combined with major floods in 1996 and 1997, elevated interest and increased public debate over the impacts of human activities on the River. The lack of information upon which to base permitting decisions emphasized the need for public forums to discuss complex issues and potential solutions. Governor Marc Racicot created the Upper Yellowstone River Task Force in 1997 to address problems arising from the floods and begin studying the cumulative effects in Park County. In 1999, the YRCDC was formed to address conservation issues on the entire river.

The Council's purpose is to provide local leadership, assistance, and guidance for the wise use and conservation of the Yellowstone River's natural resources. This purpose is founded on three fundamental precepts:
1) The need for scientific information on which to base management decisions.
2) The need for broad-based local, regional, and national input.
3) The need for technical and financial assistance to address sustainable use issues on the Yellowstone River.

Accomplishments:
The Council is currently focusing on four areas in which conservation districts traditionally work:

- Bank stabilization (310 permitting issues)
- Irrigation water impacts, availability, and water reservations
- Livestock, grazing, and farming issues
- Water quality and stream impairment

The Council is working with the Army Corps of Engineers to do the initial scoping of a federally mandated cumulative impacts study. This proposal would allow the Council to insure local input and direction into a federal effort to study the river. The Council is securing funding to provide the required local cost share.

In November 2000, the Council completed an aerial mapping project of the entire river to chart eroding banks, in-stream structures, irrigation facilities, bridges, and other features. This was followed by a county-by-county, on-site inventory of the river's physical features, completed Fall 2001.

In Fall 2000, the Council co-hosted the Yellowstone River Roundtable to coordinate federal and state technical and financial assistance. The Council was recognized as the

coordinating entity on the river and a commitment was made for the Federal and State agencies on the locally led effort.
The Council established in 2001 a Resource Advisory Committee and a Technical Advisory Committee to advise the Council on constituent and technical river issues, respectively.

Future Plans:
Over the course of the next few years, the Council plans to:

- conduct a comparative study of current and historic geomorphic features on selected sites on the river;
- create a publicly accessible spatial database in cooperation with Montana's Natural Resources Inventory System (currently under development);
- develop a Yellowstone River Resource Information and Education Center, which will include a web site with current and future river activities;
- host the "Yellowstone Challenge", a major scientific conference on the Yellowstone River issues;
- develop best management practices and project guidelines to be used on a voluntary basis for work in the Yellowstone River.

Biggest Challenge:

Contact:
Stan Danielsen
Coordinator
Yellowstone River Conservation District Council
1371 Rimtop Drive, Billings MT 59105
406-247-4414
sdanielsen@state.mt.us

Further Information

Montana

To update, add or see the latest information on watershed groups in the state, please visit: http://water.montana.edu/watersheds/groups/default.asp

Wyoming Resources

Wyoming Association of Conservation Districts: http://www.conservewy.com/

South Dakota Resources

South Dakota Association of Conservation Districts: Has been working extensively to tie watersheds, 319 and the Farm Bill together. **http://www.sd.nacdnet.org/**

South Dakota Lakes and Streams Association: Preserve, protect and restore through stewardship, education and networking. http://www.sdlakesandstreams.com/

North Dakota Resources

North Dakota Association of Conservation Districts:
http://www.nacdnet.org/resources/ND.htm

Colorado Resources

Colorado Watershed Assembly: A non-profit organization that serves all watershed groups in the state of Colorado. http://www.coloradowater.org/cwa_main.asp

Colorado Watershed Network: Our Mission is to achieve healthy watersheds throughout the State of Colorado through the development, support and implementation of volunteer monitoring, local collaborative initiatives, sound stewardship, and educational activities. http://www.coloradowatershed.org/

Utah Resources

Utah Watershed Coordinator's Council: Chair: Jeff Salt: (801) 485-2550

Utah Association of Conservation Districts: http://www.uacd.org/